

Proceedings of the 3rd International Conference on Obesity and Chronic Diseases (ICOCD-2018)

Keynote Presentations

Obesity-Associated Chronic Diseases Development: The Role of Gut Microbiota

Reza Hakkak¹⁻³

¹Department of Dietetics and Nutrition, University of Arkansas for Medical Sciences, AR, USA

²Department of Pediatrics, University of Arkansas for Medical Sciences, AR, USA

³Arkansas Children's Research Institute, University of Arkansas for Medical Sciences, AR, USA

Abstract

Obesity has been an epidemic in the US and world for more than two decades. Obesity is associated with serious health conditions, including type 2 diabetes, cardiovascular disease, certain types of cancers, hyperlipidemia, and liver steatosis. The intestinal microbiota is composed of a diverse population of obligate and facultative anaerobic microorganisms, and these organisms carry out a broad range of metabolic activities. Obesity has been linked to changes in the intestinal microbiota, but the composition of the bacterial populations in lean and obese Zucker rats has not been carefully studied. The objective of this study was to determine the effects of obesity on the gut microbiota in this model. Lean and obese female Zucker rats (n = 16) were fed an AIN-93G diet for 8 weeks. Rats were weighed twice weekly, and fecal samples were collected at the beginning and end of the experiment. 16S rRNA gene sequencing was used to evaluate the composition of the fecal bacterial populations. At the outset of the study, the lean rats exhibited much lower ratios of the Firmicutes to Bacteroidetes phyla than the obese rats, but after 60 days, this ratio in the lean rats exceeded that of the obese. Obese rats also showed increased levels of the genus Akkermansia at day 60. PCoA plots of beta diversity showed clustering of the different test groups, indicating clear differences in intestinal microbiota populations associated with both the time point of the study and the lean or obese status. Since obesity is linked to the risk of development of different chronic diseases, this model would be valuable for investigation of the interrelationship of obesity and the intestinal microbiota on the development of several human obesity-related diseases. The benefit of using this obese model is that rats become obese in a short period of time which provides a better translation to obese humans.

Obesity and Osteoporosis: Vitamin D and Magnesium as “Add-on” Players

Edita Stokic

Clinical Center of Vojvodina, Medical Faculty, University of Novi Sad, Novi Sad, Serbia

Abstract

Obesity and osteoporosis are two global health challenges with an increasing prevalence and a high impact on mortality and morbidity in the world today. Since 1975 global age-standardized BMI in men has increased from 21.7 kg/m² to 24.2 kg/m² in 2014, and in women from 22.1 kg/m² to 24.4 kg/m² in 2014. Based on WHO diagnostic criteria it is estimated that approximately 22 million women and 5.5 million men aged between 50-84 years have osteoporosis. Due to demographic change in population, the number of people with osteoporosis will rise from 27.5 million in 2010 to 33.9 million in 2025, corresponding to an increase of 23%. Accumulating evidence supports a complex relationship between obesity, adipose tissue, fat distribution and osteoporosis. Obesity adversely affects bone homeostasis by a range of mechanisms such as a modification of bone-regulating hormones and vitamin D levels, increased oxidative stress and inflammation, and altered bone cell metabolism. There is a fat mass-bone complex interaction which is directly influenced by adipose tissue dysfunction and other hormonal dysregulations. The role of

vitamin D in bone metabolism is well known, but several studies have shown a negative association between obesity, vitamin D and magnesium serum levels. We examined the frequency of concomitant deficit of magnesium and vitamin D in obese patients and evaluated the connection of these combined deficiencies. Among obese subjects 36% presented a combination of vitamin D deficiency and chronic latent Mg deficiency. In all studied patients, 25(OH) D and Mg levels both, individually and combined, showed a negative linear correlation with insulin resistance. From these facts, we conclude that maintaining normal Mg status in obese persons may improve the beneficial effects of vitamin D on comorbidities. It is possible to effectively prevent osteoporosis in obese persons but only with a well-adjusted magnesium and balanced vitamin D.

References

1. NCD Risk Factor Collaboration (NCD-RisC). 2016. Trends in adult body-mass index in 200 countries from 1975 to 2014: a pooled analysis of 1698 population-based measurement studies with 19.2 million participants. *Lancet* 387(10026): 1377-1396. [https://doi.org/10.1016/S0140-6736\(16\)30054-X](https://doi.org/10.1016/S0140-6736(16)30054-X)
2. Shapses SA, Pop LC, Wang Y. 2017. Obesity is a concern for bone health with aging. *Nutr Res* 39: 1-13. <https://doi.org/10.1016/j.nutres.2016.12.010>
3. Stokic E, Romani A, Ilincic B, Kupusinac A, Stosic Z, et al. 2017. Chronic latent magnesium deficiency in obesity decreases positive effects of vitamin D on cardiometabolic risk indicators. *Curr Vasc Pharmacol*. 15: 1. <https://doi.org/10.2174/1570161115666170821154841>

Biomarkers of Inflammation in Metabolic Syndrome

Ishwarlal Jialal

California North-state University College of Medicine, Elk Grove, CA, USA

Abstract

Metabolic Syndrome is a common disorder affecting 35% of the American adult population and predisposed to both type 2 diabetes and cardiovascular disease. Both inflammation and insulin resistance appear to be crucial underpinnings in the pathogenesis of this cardio-metabolic cluster. MetS is a pro-inflammatory state as evidenced by dysregulation of both adipose tissue biology and monocyte activity. This manifests as increased circulating and cellular biomarkers of inflammation. Circulating biomarkers that are increased include hsCRP, IL-1, IL-6, IL-8, TNF pathway, endotoxin, sCD14, LBP oxidized LDL and nitrotyrosine. There is also evidence of adipose tissue dysregulation with elevated levels of leptin, RBP-4, chemerin, PAI-I, and decreased levels of adiponectin and omentin-1. In monocytes there is increase activity of TLR 2 & 4 resulting in activation of both NF κ B and MAP kinase with release of bimediators. In adipose tissue there is increase in macrophages, fibrosis and angiogenesis. Recently exploratory metabolomics revealed further derangements in lipidomics, biogenic amines and amino acid levels. Collectively the above provide a plethora of biomarkers supporting that MetS is a pro-inflammatory state. In this presentation the best biomarkers will be defined and ranked.

Special Lecture

Analysis and Evaluation of Meals Served in State Registered Private Childcare Settings

B. M. Copeland and S. McWhinney

College of Agriculture and Human Sciences, Department of Agriculture, Nutrition & Human Ecology, Prairie View A&M University, Prairie View, TX, USA

Abstract

The prevalence of obesity nationally among 2-5 year-old children declined from 14 percent in 2003-2004 to 8 percent in 2011-2012. However, low-income families and certain racial and ethnic groups continue to have higher rates of obesity above the national average. The Dietary guideline 2015-2020 reported an under consumption in key nutrients needed to maintain health and prevent disease. The goal of this study was to determine compliance of meals offered in private childcare centers in Waller County and to analyze and evaluate the nutritional quality and content of meals served in state registered child care facilities against the 2015-2020 Dietary Guidelines. Nutritional adequacy of breakfast and lunch menus and the types of foods offered was assessed against national standards. A cross-sectional descriptive study design was utilized. A convenience sample of 10 childcare centers was selected. Menus were collected from selected centers and three were visited for on-site meal observation. Menus were analyzed for nutrient content using Nutritionist Pro software (Axxya Systems, Stafford, Texas) and the Statistical Package for the Social Sciences (SPSS). Results found a statistically significant difference between the 2015-2020 Dietary Guidelines for children between the ages of 1-5 years old and the intake of protein, fat, Vitamin A, Vitamin C, calcium, fiber, and sugar. The researchers concluded that children dietary intakes did not meet national standards on some key nutrients necessary to support proper growth and development and prevention of disease.

Advances in Nutritional Science to Slow Aging, Prevent Cancer and Dementia and Enhance Longevity

Joel Fuhrman

President, Nutritional Research Foundation, NJ, USA

Abstract

The scientific evidence shows we can win the war on cancer with adherence to a diet-style rich in anti-cancer phytochemicals; which also prevents against dementia. A Nutritarian diet refers to a diet comprehensively rich in micronutrients including protective antioxidants and phytochemicals, which also guards against excess caloric intake. The micronutrient per calorie of foods can be used to structure dietary recommendations to impact the aging process and prevent disease. Healthy Life Expectancy can be approximated by the nutrient per calorie density of one's diet. Almost all Americans are micronutrient deficient due to lack of produce, especially raw green vegetables. Striving for micronutrient adequacy-exposure to all nutrients humans needs in adequate amounts not only prevents disease and extends lifespan but it also reduces hunger signaling. High glycemic load foods, that promote excess insulin, contribute to not just obesity and diabetes, but also to cancer. High amounts of dairy products and higher intake of animal protein also drive IGF-1 into unfavorable levels and the link between elevated IGF-1 and cancer is well-established. High protein diets demonstrate increased risk of cancer, cardiovascular death and overall mortality in long-term studies. Research data and clinical cases evaluate the benefits of a Nutritarian diet for cholesterol lowering, CAD reversal, resolving type 2 diabetes, normalizing blood pressure and achieving permanent weight loss.

Session on: Childhood Obesity Treatment and Prevention

Building Bridges with SNACK: Interprofessional Education, Practice, & Collaboration to Fight Childhood Obesity in Primary Schools

Anne Farrell¹, Tracy Perron¹ and Tami Jakubowski²

¹*School of Nursing, Health, and Exercise Science, The College of New Jersey, Ewing, NJ, USA*

²*Frances M. Maguire School of Nursing and Health Professions, Gwynedd Mercy University, Furlong, PA, USA*

Abstract

An interprofessional model and coordinated school health program is desirable to adequately address the overall health and wellness of children. The College of New Jersey School of Nursing, Health, and Exercise Science in conjunction with community partners developed the Smart Nutrition and Conditioning for Kids (SNACK) program in response to the 2010 Childhood Obesity Study recognizing a 49% childhood obesity rate in Trenton New Jersey public schools. SNACK had multi foci: to increase fitness levels through Fundamental Integrative Training (FIT); increase nutritional knowledge and healthy food consumption of 7-9 year-old urban and urban rim elementary school children through classroom activities and nutrition based physical education lessons; and to empower parents and caregivers to encourage healthy food choices. Positive outcome in all areas were attained. Additional schools and organizations continue to participate in expanding SNACK efforts.

A Middle Range Theory of Maternal Perception of Child's Body Weight

Yolanda Flores-Peña^{1,2}

¹*The University Autonomus of Nuevo León, México*

²*The University of Texas at San Antonio, TX, USA*

Abstract

Aim: To build a middle range theory of maternal perception of child's body weight. This theory is focused on perception as a process and the outcomes as factors that influence the child's weight.

Background: High rates of inaccurate maternal perception of child body weight (MPCW) have been identified, more frequently when the child is overweight or obese. Moreover, there is evidence of the association of inaccurate MPCW and high rates of overweight and obesity in childhood.

Design: This middle range theory was developed deductively from the concept of social perception and from research literature published around MPCW following the steps of theory synthesis.

Results: A middle range theory was developed. This theory has inputs, and the MPCW is the outcome, that could be adequate or inadequate (overestimation or underestimation), and has influence on maternal attitudes, and behaviors related to the child's body weight.

Conclusion: This theory offers an explanation how mothers build a judgment about their child's body weight. The health professionals could work with the factors that influence the MPCW to increase the maternal motivation to engage in interventions to prevent or treat childhood overweight or obesity. Moreover the information could be used to change the MPCW and to promote positive parenting practices that impact health habits.

The Association Between Fundamental Motor Skill Acquisition, Activity Levels, and Academic Achievement for School Aged Children: Part of the Healthy Schools Healthy Students Initiative

Laura Bruno¹ and Anne Farrell¹

Department of Health & Exercise Science, The College of New Jersey, Ewing, NJ, USA

Abstract

Given the significant number of hours youth spend at school and in school-related activities, schools are an amazing

domain to advance investment in standard physical activity (PA) and the physical health of grade-school children; nonetheless, less than 4% of grade schools across the nation give access to every day physical instruction and less than half offer regular recess. The unfortunate demands for today's student places a major emphasis on standardized test performance, and consequently the large majority of the school day is spent sitting in the classroom with little to no opportunity to engage in physical activity. This session will focus critical information derived from Healthy Schools Healthy Students initiative in Mercer County New Jersey. Data provided to support: 1) the connection between the quality and quantity of physical education on the rates of fundamental motor skill acquisition, 2) the association between academic achievement and activity levels, and 3) simple ways for short bursts of activity to be incorporated throughout that actually enhance learning and focus may improve fitness.

ProMedica's Food Clinic: A Unique Approach to Address Hunger as a Health Issue

Kate Sommerfeld, Camelia Arsene', Randy Oostra and Lee Hammerling

ProMedica LLC, OH, USA

Abstract

In 2014, ProMedica began screening patients for food insecurity using the Hunger Vital Sign™. Individuals who screen positive in primary care offices are referred to ProMedica's Food Clinic where they receive several days of healthy food for their families.

Objective: To evaluate primary care hunger screening patterns in relation to obesity and chronic diseases and report the preliminary impact of the ProMedica Food Clinic on healthcare utilization and cost.

Methods: Data were gathered from several electronic resources to understand primary care referral patterns, patient characteristics, food clinic utilization, healthcare utilization and cost. A high-level evaluation of all patients was performed, followed by a subset analysis of patients insured by a Medicaid managed plan.

Results: Trained primary care practices screened 51% of patients. Patients who screened positive for food insecurity and completed a referral to the food clinic had a higher BMI on average, a larger number of co-morbidities, and were more likely to have diabetes than those who screened positive but did not utilize the food clinic. Among patients who screened positive and completed the food clinic referral, avoidable admissions and emergency department (ED) visits declined. Inpatient admissions and total cost (TC) per member per month increased when comparing utilization before and after. ED visits and TC increased for patients who screened positive and did not complete the referral.

Conclusions: ED visits and avoidable admissions decreased in patients using the food clinic. Observed inpatient admissions and TC for these patients increased, these admissions were appropriate as avoidable admissions were zero.

Using School Staff Members to Implement a Childhood Obesity Prevention Intervention in Low-Income School Districts: The Massachusetts Childhood Obesity Research Demonstration (MACORD Project), 2012-2014

Rachel E. Blaine¹, Rebecca L. Franckle², Claudia Ganter³, Jennifer Falbe⁴, Catherine Giles⁵, Shaniece Criss⁶, Jo-Ann Kwass⁷, Thomas Land⁸, Steven L. Gortmaker⁵, Emmeline Chuang⁹, Kirsten K. Davison² and MA-CORD Project Group

¹*Department of Family and Consumer Sciences, California State University, Long Beach, CA, USA*

²*Department of Nutrition, Harvard T.H. Chan School of Public Health, MA, USA*

³*Medical Faculty Mannheim, Heidelberg University, Mannheim Institute of Public Health, Social and Preventive Medicine, Mannheim, Germany*

⁴*University of California, Davis, CA, USA*

⁵*Department of Social and Behavioral Sciences, Harvard T.H. Chan School of Public Health, MA, USA*

⁶*Health Sciences Department, Furman University, SC, USA*

⁷*Bureau of Community Health and Prevention, Massachusetts Department of Public Health, MA, USA*

⁸*Office of Data Management and Outcomes Assessment, Massachusetts Department of Public Health, MA, USA*

⁹*University of California, Los Angeles, Fielding School of Public Health, CA, USA*

Abstract

Introduction: Although evidence-based interventions to prevent childhood obesity in school settings exist, few studies have identified factors that enhance school districts' capacity to undertake such efforts. We describe the implementation of a

school-based intervention using classroom lessons based on existing “Eat Well and Keep Moving” and “Planet Health” behavior change interventions and school wide activities to target 5,144 children in 4th through 7th grade in 2 low-income school districts

Methods: The intervention was part of the Massachusetts Childhood Obesity Research Demonstration (MA-CORD) project, a multisector community-based intervention implemented from 2012 through 2014. Using mixed methods, we operationalized key implementation outcomes, including acceptability, adoption, appropriateness, feasibility, implementation fidelity, perceived implementation cost, reach, and sustainability.

Results: MA-CORD was adopted in 2 school districts that were facing resource limitations and competing priorities. Although strong leadership support existed in both communities at baseline, one district’s staff reported less school wide readiness and commitment. Consequently, fewer teachers reported engaging in training, teaching lessons, or planning to sustain the lessons after MA-CORD. Interviews showed that principal and superintendent turnover, statewide testing, and teacher burnout limited implementation; passionate wellness champions in schools appeared to offset implementation barriers.

Conclusion: Future interventions should assess adoption readiness at both leadership and staff levels, offer curriculum training sessions during school hours, use school nurses or health teachers as wellness champions to support teachers, and offer incentives such as staff stipends or play equipment to encourage school participation and sustained intervention activities.

Intra-Racial Differences: The Effect of Poverty and Obesity on the Psychosocial Profile of Mexican-American Children

Marie Leiner¹, Jesus Peinado¹, Maria Theresa Villanos¹, Ricardo Uribe BA² and Indu Pathak¹

¹Paul Foster School of Medicine, Department of Pediatrics, El Paso, Texas, TX, USA

²Paul Foster School of Medicine, Department of Education, El Paso, Texas, TX, USA

Abstract

Introduction: The high prevalence of obesity among children of Mexican descent, living in either Mexico or the United States (US), might indicate they are at a higher risk when compared to other groups. Previous mental health studies have had conflicting outcomes, which may be the result of considering these children as a homogeneous group (by race or ethnicity) instead of considering intra-racial group differences (e.g. socio-economic status, adversities).

Objective: To compare the psychosocial profile by weight category (normal weight, overweight, or obese) of impoverished Mexican descendent children in a clinical setting.

Methods: The study design was cross sectional. Information was retrieved from medical records (N = 2237) that were obtained from five university-based clinics in a large metropolitan area on the US-Mexico border from May 2009 to August 2010.

Results: Psychosocial and behavioral problems were present among this intra-racial group of Mexican-American children, with higher scores in the overweight and obese children than in the normal-weight children

Discussion: Intra-racial differences among obese and overweight children could account for variation in results regarding the mental health of Mexican American children.

Conclusion: Considering intra-racial group differences when providing healthcare may improve delivery and promote better mental and health outcomes because some groups may need more attention than others. In addition, considering these groups when designing studies, may improve the accuracy and precision of study result interpretations.

Shifting the Paradigm from Providing Education to Engaging Employees in Their Health and Wellness

Stacey Lane^{*}, Jeanette Bogdan^{*} and Carmela Valentino

Yale New Haven Health System, CT, USA

Abstract

Yale New Haven Health System (YNHHS) expanded their livingwellCARES employee chronic disease management program to include at risk individuals. Through risk stratification we identified 38% of our benefit covered employees were obese. Expansion enabled us to provide interventions, education, and support to include all employees at risk. This was accomplished

by building relationships based on mutual respect and trust with health care professionals. Staff used evidence-based health coaching and wellness initiatives system-wide, led group learning series and identified peer champions to increase awareness and engagement among YNHHS employees. We promote a work environment that supports self-care and provides the environment to ensure success. We drive wellness initiatives, identify manager champions, support accessibility to internal resources, and have yearly biometric screenings along with an interactive health risk assessment portal. Group learning series includes: weight management, physical activity, risky behaviors, stress management, smoking cessation, work-life balance, sleep, and mindfulness. With all of these initiatives, cultural diversity, health literacy and socio-economic factors are considered critical in the design of our programs. Evidence-based metrics are utilized to measure success. We have demonstrated a 69-79% positive progression and/or achievement of goals with individuals that engage in the livingwellCARES program. Goals include measuring clinical, behavioral, and health care utilization outcomes. We demonstrated an overall cost savings for our engaged population and a 98% participant satisfaction rate. Opportunities exist around increased engagement with primary care, adherence to EBM-based care indices, and enrollment of larger proportion of those who are at risk.

Keynote Presentations

Cardiovascular Disease as a Result of the Interactions Between Obesity, Climate Change, and Inflammation: The COCCI Syndemic

Michael Clearfield

Touro University College of Osteopathic Medicine- California, Vallejo, California, CA, USA

Abstract

Numerous breakthroughs in medicine and technology over the past half century have addressed risk factors for and treatment of cardiovascular disease (CVD). However, even with the significant benefit in treating these risk factors there still remains a considerable residual risk in both primary and secondary cardiovascular risk populations.

Obesity and climate change conspire to create an environment within the body resulting in subclinical vascular inflammation. This inflammation within the vasculature promotes and augments atherosclerosis and cardiovascular events thus contributing to sustaining CVD as the number one cause of global mortality.

The syndemic model requires two or more diseases or health conditions (such as obesity and climate change) clustering within a specific population. In the syndemic model when these health conditions are superimposed on associated societal and biosocial factors they synergistically augment each other to create an even greater adverse interaction.

The COCCI (Cardiovascular Disease, Obesity, Climate Change, Inflammation) syndemic model highlights the importance of these interactions and the need for the health care community to rise to the challenge to address this complex issue as a priority for overall public health and well-being as well as a social justice issue.

Fast Food Genocide Destroying Bodies and Brains with Processed Foods

Joel Fuhrman

President, Nutritional Research Foundation, NJ, USA

Abstract

This presentation enables people to understand the serious health risks associated with processed and fast food consumption, even from occasional use. These “Frankenfoods” do not merely increase death from heart disease and cancer, but also impair the human brain creating depression, lowering intelligence and increasing propensity for drug abuse and crime. Importantly, the worst food choices create food addiction, leading to excessive caloric intake and dependency. Alternatively, recent advances in nutritional science can enable us to effectively prevent cancer, heart disease and dementia; pushing the envelope of human longevity and preventing a tremendous amount of human tragedy. Working collectively, we can save millions of people from needless suffering. According to a study by The Rand Corporation, obese individuals also spend about 36% more than average-sized people on health services and 77% more on medications. In vulnerable communities with limited access to fresh produce, often referred to as food deserts, we see much higher rates of obesity, diabetes, cancer and strokes magnifying suffering and straining the limited financial resources of the community to care for so many sick individuals.

Metabolic Syndrome: How Obesity and Hepatic Dysmetabolism Consort to Determine NAFLD, and Insulin Resistance

Andrea Romani

Department of Physiology and Biophysics, Case Western Reserve University, Cleveland, OH, USA

Abstract

The last thirty years have registered a progressive and dramatic increase in the incidence of obesity in both developed and developing countries. Metabolic Syndrome represents one of the most commonly diagnosed conditions associated with obesity, and it has been identified as predisposing to major cardiovascular complications as well as various forms of cancer including liver, colon, and breast cancer among others. Currently, anywhere between 35 to 45% of the adult population, but also adolescents and children, are affected by obesity and clinical parameters typical of metabolic syndrome, with some marked differences in terms of age of onset, and race, ethnicity, and gender predisposition. According to the latest releases from the WHO, it is estimated that approximately 1 billion people worldwide are obese, and near 500 million are diabetic, or at risk of developing diabetes. Because the underlying causes of increased obesity incidence are not completely understood, it is presently difficult to establish short and long-term health guidelines and therapeutic approaches that can help containing the progression and possibly reversing the uptrend of obesity, metabolic syndrome, and their complications. The term 'metabolic syndrome' encompasses several clinical and hematic metabolic factors that altogether raise significantly the risk for heart disease, stroke, diabetes, and the particular forms of cancer mentioned above. Liver steatosis, with or without inflammation (steatohepatitis) and progression to NAFLD is considered pathognomonic of metabolic syndrome and represents the most common clinical manifestation of the disease. While the etiology of metabolic syndrome is most likely multi-facet, the condition is characterized by a major lipid dysmetabolism within liver and adipose tissue as well as systemically, connotations that it shares with T2DM. Inflammation is a key component of both pathologies, in that enhanced levels of inflammatory cytokines have been observed in the circulation and within specific organs, in which they may impair insulin responsiveness and systemic glucose homeostasis.

Altogether, metabolic syndrome, NAFLD, obesity and insulin resistance pose major financial and health burdens on the affected individuals, and the medical and productive systems of the various countries. The predisposition to the various associated complications and the financial costs relative to their treatments argue for the necessity to better understand the causes responsible for the onset of metabolic syndrome and its complications and to identify more effective therapeutic and dietary approaches.

Chronic Disease Burden Associated with Obesity in the Hispanic Population

Kimberly Y. Z. Forrest¹ and Alyssa G. Forrest²

¹Slippery Rock University of Pennsylvania, PA, USA

²Independent Researcher

Abstract

Background: Obesity is a major health concern in Hispanics. Certain chronic diseases are also more prevalent in the population. This study evaluated the relationship between obesity and selected chronic diseases, and the associated population attributable risk of chronic diseases due to obesity in the U.S Hispanic population.

Methods: Data from the 2013-2014 National Health and Nutrition Examination Survey (NHANES) were analyzed. The NHANES is designed to assess the health and nutritional status of the U.S. population. Weighted data were used for better population representation through the SAS survey procedures. Due to its adverse impact on health, central obesity was used in this analysis and defined by a sagittal abdominal diameter of ≥ 22 centimeters in males and ≥ 20 centimeters in females.

Results: Among the 1,241 participants ($20 \pm$ years), the prevalence rate of central obesity was 42.4%. The rate was consistent throughout most age groups. Significantly more females than males were obese. Significantly higher obesity rates were observed among those with diabetes (53.7%), high cholesterol (49.1%), hypertension (54.8%), heart disease (51.5%) and arthritis (51.4%). The population attributable risk due to central obesity was 7.1% for diabetes, 3.0% for high cholesterol, 3.2% for hypertension, 14.3% for heart disease, and 4.5% for arthritis.

Conclusions: Obesity has a substantial impact on the selected chronic diseases in the Hispanic population. If obesity can be controlled, about 3-14% of these chronic diseases can be prevented. Programs that aim for better weight management through promoting healthy lifestyles are encouraged for this population.

Burden of Asthma and Obesity among Asian Americans

Monideepa B. Becerra^{1*} and Benjamin J. Becerra²

¹Department of Health Science and Ecology, California State University, San Bernardino, CA, USA

²School of Allied Health Professions, Loma Linda University, Loma Linda, CA, USA

Abstract

The purpose of this study was to evaluate the association between obesity and asthma among six different Asian American subgroups in California. While much of the literature has highlighted such a putative association among other populations, Asian Americans are often overlooked due to the model minority myth and collapsing of a heterogeneous group as one. In this study, we utilized the California Health Interview Survey (CHIS), 2001-2011 dataset of adults only. Survey-weighted descriptive, bivariate, and logistic regression analyses were conducted using SAS 9.4. Only those reporting as one of the following groups were included in this study: Chinese, Filipino, South Asian, Japanese, Korean, Vietnamese. A total of 19,841 respondents were included in the study. The outcome variable for the study was lifetime prevalence of asthma and the independent variable was body mass index (BMI), where both standard U.S. and World Health Organization Asian cutoffs were used. Results show a 7.6% lifetime prevalence of asthma among the Asian American population, with prevalence ranging from 4.9% among Koreans to 13% among Filipinos. The highest prevalence of obesity (based on Asian and Caucasian BMI cutoffs) and asthma were noted among Filipinos, followed by South Asians. Upon adjusting for sociodemographic characteristics, odds of asthma among obese (based on Asian cutoffs) Chinese, Filipino, South Asian, and Japanese subgroups were found to be 1.92, 2.13, 2.32, and 3.34, respectively. National policy is required to re-evaluate body mass index cutoffs for Asian Americans, in addition to screening for obesity comorbidities, such as asthma.

Obesity Class I and II and Concomitant Diabetes. The Void Left Behind by the NIH Guidelines for Bariatric Surgery

Antonio Gangemi

University of Illinois, Chicago, IL, USA

Abstract

US has the highest mean BMI among high income countries. One in 3 adults has BMI > 30. Between 1980 and 2008, global mean BMI increased at an annualized rate of 0.4 kg/m² decade for men and 0.5 for women. Diabetes parallels the obesity trend. Total estimated cost of obesity in US is \$147 billion to nearly \$210 billion per year. Dietary restrictions have demonstrated only 6% success. Physician supervised, medically approached weight loss strategies have about 12% success rate. Bariatric surgery has proved to be the most effective strategy in treating obesity. Currently, indications for bariatric surgery are based on the guidelines established by National Institute of Health (NIH) in 1991 (BMI³35 + associated medical co-morbidities or BMI³40). A significant and growing number of patients who have one or more components of metabolic syndrome and a BMI < 35 are left out from bariatric surgery intervention as payers base their coverage for bariatric surgery on the 1991 NIH guidelines. We do review the currently available literature on the topic and present our bariatric center experience with the aim of starting a constructive and collegial conversation on the possible revision of NIH guidelines for bariatric surgery.

Influences of Obesity and Bariatric Surgery on the Clinical and Pharmacologic Profile of Rivaroxaban

Kenneth Todd Moore^{*} and Dino Kröll

Janssen Pharmaceuticals, Titusville, NJ, USA

Abstract

The health implications of obesity are myriad and multifaceted. Physiologic changes associated with obesity can affect the absorption, distribution, metabolism, and excretion of administered drugs, thereby altering their pharmacologic profiles. In 2016, the Scientific and Standardization Committee of the International Society on Thrombosis and Hemostasis published recommendations about the use of direct oral anticoagulants (DOACs) in obese patients. This guidance provides uniform recommendations for all DOACs, yet data suggest that individual agents may be affected to different degrees by obesity.

Moreover, there are no recommendations currently available to guide DOAC use in bariatric surgery patients, in whom anatomic and physiologic changes to the digestive system can influence drug pharmacokinetics. Our review of the available literature indicates that the clinical profile of the DOAC rivaroxaban is not affected by high weight or bariatric surgery; hence, it does not appear that rivaroxaban dosing needs to be altered in these patient populations.

Assessing Down Syndrome Body Mass Index and Body Composition

Thiago Artioli¹, Eduardo Witsmiszyn and Aleksandro Belo e Carla Pinto

Irmandade da Santa Casa de Misericórdia de São Paulo, Brazil

Abstract

Introduction: Down syndrome (DS) is the most frequent aneuploidy in the humans. Children with DS have a predisposition to obesity, and it is known that the phenotype of these individuals may lead to a bias in the use of the World Health Organization body mass index (WHO BMI).

Objectives: This study proposes the assessment of body composition in individuals with DS using the dual X-ray absorptiometry (DXA) technique, the current gold standard for comparison of its values with those found in general population.

Method: Data was collected randomly from patients, such as their BMI and body composition with the DXA machine Lunar Prodigy Advance[®], with their values compared to literature references and statistically analyzed with their WHO BMI Z-score.

Results: 45 individuals were analyzed, with a prevalence of 58% of girls, mean age of 11 years old and 35.5% were obese by WHO BMI Z-score; 57.1% of the subgroup of eutrophic individuals with DS by WHO BMI had altered body composition values.

Conclusion: The WHO BMI Z-score in patients with DS has a correspondence with the body composition only in individuals classified as overweight or obese by BMI Z-score. It was concluded that BMI is not an appropriate tool to infer the body composition in children with DS.

Does Weight Loss Improve Fertility with Respect to Semen Parameters? Results from a Large Cohort Study

Mir Jaffar¹, Syed Waseem Andrabi² and Kamini A. Rao³

¹Scientific Director, Milann Hospital, India

²CSIR Lucknow, India

³Milann Hospital, India

Abstract

Objective: To determine whether weight loss in obese men improves seminal parameters.

Design: Prospective interventional study.

Setting: Infertility clinic and weight loss centers.

Patients: All men attending infertility center from April 2012 to May 2015 (n = 105).

Interventions: Diet counseling and exercise.

Main Outcome Measures: Collected reproductive parameters included semen analysis (ejaculate volume, sperm concentration, progressive, and nonprogressive motility) data. Body mass index (BMI) was calculated for all patients with comparisons to reproductive parameters before and after weight loss by Spearman's rank correlation and Mann-Whitney U-test.

Results: The mean BMI was significantly higher before weight loss (33.2) than after weight loss (30.4) in obese men. The weight loss had significant positive correlation with percentage of progressive sperm motility (p = 0.001) and static percentage (p ≤ 0.001). Weight loss had nonsignificant correlation with semen volume (p = 0.172), concentration (p = 0.351), and nonprogressive motile sperm (p = 0.332).

Conclusions: In one of the largest cohorts of male fertility and obesity, semen parameters demonstrated mild but significant relationships with BMI and semen parameters, possibly contributing to subfertility in this population.

Disruptions in the Reproductive Ability of the Offspring Caused by Diet-Induced Maternal Overweight

Galarza RA, Rhon Calderón EA, Cortez AE and Faletti AG*

Universidad de Buenos Aires, CEFYBO-CONICET, Facultad de Medicina, Buenos Aires, Argentina

Abstract

Maternal over nutrition may induce multiple pathologies both in the mother and in the offspring. The risk of these diseases has a direct relation to the degree of overweight or severity of maternal obesity. A poor quality of nutrition, by either excess or restriction, can disrupt the ovarian function, especially the development and quality of oocytes. Therefore, we studied the effect of maternal overweight and obesity on the ovarian reserve, follicular development, and ovulation of the offspring and to assess whether this maternal condition is able to alter oocyte integrity. To this end, female offspring from rats fed standard (OSD) or cafeteria (OCD) diet were used. Cafeteria feeding from weaning mimics the eating habits of many people from an early age and is effective inducing obesity. To relate the effects observed in the offspring to the different degree of overweight of their respective mothers, offspring were divided into 3 groups: offspring from rats with standard diet (OSD), and offspring from rats with 17% and 28% overweight (OCD17 and OCD28, respectively). Body weight, vaginal opening, and estrous cycle were recorded, and ovaries were obtained on the day of the second estrus. In addition, ovarian weight, ovulation rate (measured by the number of oocytes within oviducts), follicular development (determined by histology), hormone levels and oocyte integrity were examined. Both OCD groups showed higher body weight, but OCD28 also exhibited early vaginal opening and higher ovarian weight and glycemia at euthanasia compared with OSD. Both OCD17 and OCD28 had lower number of primordial and primary follicles, and only OCD28 exhibited lower number of antral follicles, all compared with OSD rats. In addition, both OCD17 and OCD28 had higher ovulation rate than controls, and OCD28 had lower number of healthy oocytes, which, in turn, exhibited morphological alterations such as larger perivitelline space, zona pellucida than those of control animals. Moreover, some oocytes from OCD28 were deformed and exhibited irregular membranes. Likewise, both OCD groups exhibited changes in the serum levels of hormones, including anti-Mullerian hormone. These results indicate that maternal overweight may severely affect the reproductive ability of the offspring, as a result of inducing i) early puberty, ii) high rate of follicle loss, which means less follicular reserve, iii) risk of premature ovarian aging, iv) poor oocyte quality, and v) hormonal imbalance.

Periodontal Diseases and Obesity: What do Clinicians Know?

Sara Laurencin-Dalcieux^{1,2*}, Alexia Vinel^{1,3}, Matthieu Rimbert¹, Laurianne Alizon¹, Chloé Vachon¹ and Pierre Barthet¹

¹Department of Periodontology, Faculty of Dental Surgery, University of Toulouse 3, Toulouse, France

²CPTP, Centre de Physiopathologie de Toulouse Purpan (INSERM)-U 1043, University of Toulouse 3, Toulouse, France

³I2MC, Institut National de la Santé et de la Recherche Médicale (INSERM)-U 1048, University of Toulouse 3, Toulouse, France

Abstract

Resulting from an imbalance between a permissive host and pathogenic bacteria, periodontal diseases (PDs) are widely distributed all around the world and increasingly considered in a global context called periodontal medicine. While the concept of periodontal medicine is widely spread among the dentist community, little is known about general practitioners' (GPs) knowledge regarding associations between periodontal and systemic diseases. The aim of our study was to evaluate GPs' knowledge, attitude, and practice regarding periodontal medicine, using a questionnaire distributed in southern France. The results showed that although periodontal medicine is a front-page topic in periodontal research nowadays, it seems to be far away from GPs' consideration. Although most of them have received information about PDs during their studies and occasionally ask patients about their oral health and care, they do not appear to establish a clear link between oral status and common systemic diseases other than diabetes or cardiovascular diseases (CVD). Regarding obesity, a recent meta-analysis showed a positive association between weight gain and the incidence of periodontitis, supporting a detrimental effect of obesity on periodontal health. Surprisingly, in our study, obesity, which is an important risk factor for both diabetes and CVD, was not linked to PDs by GPs, whereas more than half of them connected the latter to diabetes and CVD.

Considering that oral cavity often reflects the general health status of our patients, the results of this study reflect the importance of inter-professional exchanges and continuous education in order to better apprehend and treat our patients.

A U-Shaped Association Between Body Mass Index and Psychological Distress on the Multiphasic Personality Inventory: Retrospective Cross-sectional Analysis of 19-year-old Men in Korea

Tachyun Kim^{1,2*}, Jung Jun Kim^{1,3}, Mi Yeon Kim¹, Shin Kyoung Kim⁴, Sungwon Roh⁵ and Jeong Seok Seo^{6,7}

¹Incheon-Gyeonggi Regional Military Manpower Administration, Suwon, South Korea

²Department of Neuropsychiatry, Seoul National University Bundang Hospital, Seongnam, South Korea

³Department of Urology, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, South Korea

⁴Department of Rehabilitation Medicine, Konkuk University Chungju Hospital, Chungju, South Korea

⁵Department of Mental Health Research, Seoul National University Hospital, Seoul, South Korea

⁶Department of Psychiatry, Konkuk University Chungju Hospital, Chungju, South Korea

⁷Department of Psychiatry, School of Medicine, Konkuk University, Seoul, South Korea

Abstract

The aim of this study was to identify the specific pattern between body mass index (BMI) and psychological distress using the objective personality test. For this study, we investigated BMI and the Korean Military Multiphasic Personality Inventory (MPI). A retrospective cross-sectional study was conducted with 19-year-old examinees who were admitted to the Military Manpower Administration in Korea from February 2007 to January 2010. Of 1,088,107 examinees, we enrolled 771,408 subjects who were psychologically apparent healthy possible-military-service groups. Afterwards, we reviewed and analyzed directly measured BMI and MPI results. In terms of the validity scales, the faking-good subscale showed an inverted U-shaped association, and faking-bad and infrequency subscales showed a U-shaped association with BMI groups. In terms of the neurosis scales, all clinical subscales (anxiety, depression, somatization, and personality disorder) also showed a U-shaped association with BMI groups. For the psychopath scales, the schizophrenia subscale showed a U-shaped association, and the paranoia subscale showed a near-positive correlation with BMI. In conclusion, a specific U-shaped pattern was observed between BMI and the MPI in 19-year-old men in Korea. Underweight and obesity are related to psychological distress, so supportive advice and education are needed to them.

Blood Cadmium is Associated with Osteoporosis in Obese Males but Not in Non-Obese Males: The Korea National Health and Nutrition Examination Survey 2008-2011

Won-Jun Choi* and Seong-Kyu Kang

Gachon University Gil Medical Center, South Korea

Abstract

Osteoporosis in males is becoming an important health concern in an aging society. The aim of this study was to investigate the associations between cadmium exposure and osteoporosis by considering the effect of obesity in aged males using a representative sample of the Korean population. Using the fourth and fifth Korea National Health and Nutrition Examination Survey data, 1089 males over 50 years of age were analyzed. The blood cadmium concentration was measured. The bone mineral density in the total hip, femur neck, and lumbar spine was measured using dual-energy X-ray absorptiometry. T-scores to determine the presence of osteoporosis were calculated using a Korean reference. Subjects were stratified into two groups according to obesity status (body mass index < 25 kg/m² and ≥ 25 kg/m²). In comparison with obese subjects with blood cadmium < 1.00 µg/L, those with blood cadmium > 1.50 µg/L had odds ratios of 4.57 (95% confidence interval [CI] 1.49-14.01) and 5.71 (95% CI 1.99-16.38) at the femur neck and any site, respectively, after adjusting for potential confounders such as age, serum creatinine, vitamin D deficiency, smoking, alcohol drinking, and physical activity level. However, this association was not significant in non-obese males. In conclusion, the effect of cadmium on osteoporosis was different by obesity status in aged males.

Molecular Modeling Approaches in the Identification of Series of Imidazolone Thiocarbamides as Antihyperlipidemic, Antiadipogenic Agents through HMG-CoA Inhibition by Using Pharmacophore Modeling and Virtual Screening

Shradha Sinha¹, Shruti Maulekhi² and Vishal M. Balaramnavar²

¹Department of Chemistry BBD NIIT, Lucknow, India

²Global Institute of Pharmaceutical Education and Research, Kashipur, Uttarakhand, India

Abstract

Imidazolones are the important class of heterocycles which includes many compounds with biological and chemical interest. Diverse biological activities such as anti-inflammatory, antimicrobial is associated with this nucleus. Several 2-imidazolone derivatives are biotin antagonists and are capable of inhibiting the growth of malignant tumors. In the view of above observations our previously synthesized imidazolone thiocarbamides as CNS anticonvulsants and Mao inhibitors (*J International Academic Research for Multidisciplinary*. 2016 4: 103-109.) were evaluated by pharmacophore modeling as antiadipogenic and antiobesity agents. The previously developed pharmacophore model was used to predict the antihyperlipidemic activity of novel compounds. The pharmacophore model was developed using the known compounds from the dataset of 10 potent compounds with activity range between IC₅₀1900-5nM. In this study we reported a novel series of compounds belonging to the substituted imidazolone thiocarbamide derivatives using the Hip-hop module of catalyst software. The test set of 16 prioritized compounds from the library of 200 compounds was used against the pharmacophore query. The basis of selection is the fit value criteria ranging from 3-5. Series were showing good to moderate activity predicted as antihyperlipidemic through HMG-CoA inhibition. The selected series was again validated for the further validation for antiadipogenic activity. The already published model (*Journal of Lipid Research*. 2014 55(6): 1019-1032.) is used to study the probable antiadipogenic activity of the selected series of ligands. The predicted most active ligand from the training set was considered to bind in the similar fashion as that of standard at the receptor active site.

CDK6 Inhibits White to Beige Fat Transition by Suppressing RUNX1

Xiaoli Hou^{1,2}, Yongzhao Zhang¹, Wei Li¹⁻³, Alexander J. Hu¹, Chi Luo⁴, Wenhui, Zhou¹, Jamie K. Hu¹⁻⁵, Stefano G. Daniele⁵, Jinfeng Wang¹⁻⁶, Jinghao Sheng¹⁻⁷, Yongsheng Fan², Andrew S. Greenberg⁸, Stephen R. Farmer⁹ and Miaofen G. Hu¹

¹Molecular Oncology Research Institute, Tufts Medical Center, Boston, MA, USA

²Zhejiang Chinese Medical University, Center for Analysis and Testing, 548 Bin-Wen Road, Hangzhou, 310053, P. R. China

³Tianjin Medical University Cancer Institute and Hospital, National Clinical Research Center of Cancer, Key Laboratory of Cancer Prevention and Therapy, Tianjin 300060, P.R. China

⁴Department of Cancer Biology, Dana-Farber Cancer Institute and Department of Cell Biology, Harvard Medical School, Boston, MA, USA

⁵Yale School of Medicine, MD and MD-PhD program, 333 Cedar St. New Haven, CT, USA

⁶Department of Clinical Laboratory, Linyi People's Hospital, 27 jiefang road, Linyi, Shandong Province, 276003, China

⁷Institute of Environmental Health, School of Public Health, Zhejiang University, 866 Yuhangtang Road, Hangzhou 310058, China

⁸Obesity and Metabolism Laboratory, JM-USDA Human Nutrition Research Center, 711 Washington Street, Boston, MA, USA

⁹Boston University School of Medicine, Department of Biochemistry, 72E Concord St, Boston, MA, USA

Abstract

Obesity has long been known to be the most important risk factor for the development of type II diabetes and other metabolic diseases. Whereas white adipose tissue depots contribute to the development metabolic diseases, brown and beige adipose tissue has beneficial metabolic effects. By employing Cdk6 mouse models, we show that CDK6 regulates beige adipocyte formation. We demonstrate that mice lacking the CDK6 protein or its kinase domain (K43M) exhibit significant increases beige cell formation, enhanced energy expenditure, better glucose tolerance and improved insulin sensitivity, and are more resistant to high fat diet-induced obesity. Re-expression of CDK6 in Cdk6^{-/-} mature or precursor cells, or ablation of RUNX1 in K43M mature or precursor cells, reverses these phenotypes. Furthermore, RUNX1 positively regulates the expression of Ucp-1 and Pgc-1a by binding to proximal promoter regions. Overall, our findings reveal that CDK6 kinase activity functions as a potent regulator of white to beige cell transition, providing a new therapeutic target for pharmacological intervention aimed at combatting the imminent obesity epidemic and its related metabolic diseases.

Young Researchers Forum

Cardiometabolic Remodeling in Obesity-Associated Heart Failure: New Therapeutic Strategies

Kunduzova Oksana^{*}, Alfarano Chiara, Anesia Rodica, Valet Philippe and Parini Angelo

French National Institute for Health and Medical Research (INSERM) 1048, Institute of Cardiovascular and Metabolic Diseases (I2MC), Paul Sabatier University, Toulouse, Cedex 4, France

Abstract

Aim: Heart failure is a leading cause of morbidity and mortality among obese individuals. Adipose tissue releases a large number of bioactive mediators that regulate metabolism, structure and function of the heart. Here we investigate the role of apelin, an adipocyte-derived factor, in cardiometabolic remodeling in obesity-associated heart failure.

Methods: Adult male C57BL/6J, apelin knock-out (KO) or wild-type mice were fed a high-fat diet (HFD) for 18 weeks. To induce heart failure, mice were subjected to pressure overload after 18 weeks of HFD. Long-term effects of apelin on fatty acid (FA) oxidation, glucose metabolism, cardiac function and mitochondrial changes were evaluated in HFD-fed mice after 4 weeks of pressure overload. Cardiomyocytes from HFD-fed mice were isolated for analysis of cardiometabolic responses.

Results: In HFD-fed mice, pressure overload-induced cardiac dysfunction is associated with reduced FA utilization ($P < 0.05$), accelerated glucose oxidation ($P < 0.05$) and mitochondrial damage. Treatment of HFD-fed mice with apelin for 4 weeks prevented pressure overload-mediated decline in FA metabolism ($P < 0.05$) and mitochondrial defects. Furthermore, apelin treatment lowered fasting plasma glucose ($P < 0.01$), improved glucose tolerance ($P < 0.05$) and preserved cardiac function ($P < 0.05$) in HFD-fed mice subjected to pressure overload. In apelin KO HFD-fed mice, spontaneous cardiac dysfunction is associated with reduced FA oxidation ($P < 0.001$) and increased glucose oxidation ($P < 0.05$). In isolated cardiomyocytes, apelin stimulated FA oxidation in a dose-dependent manner and this effect was prevented by small interfering RNA sirtuin 3 knockdown.

Conclusions: Our findings suggest that obesity-related decline in cardiac function is associated with defective myocardial energy metabolism and mitochondrial abnormalities. Furthermore, our work points for therapeutic potential of apelin to prevent myocardial damage linked to obesity.

Double Burden of Malnutrition in Caldas and an Approach to its Social Determinants

Valentina Cortés-Osorio^{*} and Nancy Paola Murcia Moreno^{*}

Universidad Nacional de Colombia - Sede Bogotá - Facultad de Medicina - Departamento de Nutrición - Bogotá, D.C. - Colombia

Abstract

Introduction: The social problems that arise from the Double Burden of Malnutrition have been recently recognized. Nevertheless, studies carried out in Bogotá D.C. and the municipality Tumaco stand out.

Objective: Identify and analyze both the general population and the individual double burden of malnutrition in Caldas from the Diagnóstico Nutricional de Caldas 2014 (Spanish for Caldas Nutritional Diagnosis, 2014) to make an approach to its main social determinants in the municipality of Aguadas-Caldas.

Materials & Methods: A descriptive, analytical and cross cutting study developed in two phases. During the first, the Diagnóstico Nutricional de Caldas 2014 data bases were analyzed to identify both the general population and the individual Double Burden of Malnutrition, considering the variables sex and age; the second phase consisted of the design, implementation and the analysis of an interview in seven similar cases in order to make an approach to the Double Burden of Malnutrition social determinants in Aguadas.

Results: General population Double Burden of Malnutrition is evident in all the groups that were assessed; besides there is but low prevalence of individual Double Burden of Malnutrition. The main determinants of the double burden of malnutrition in Aguadas are socioeconomic, gestational and nutritional.

Conclusion: General population Double Burden of Malnutrition is present in Caldas, with children under 18 years being the group with the highest prevalence values. No significant differences in terms of sex were observed. It is fundamental to identify the main Double Burden of Malnutrition social determinants to have an impact in the problematic foundations.

Status of Cardiovascular Health in Chinese Children and Adolescents: A Cross-Sectional Study in China

Pengfei Guo* and Yanna Zhu

Department of Maternal and Child Health, School of Public Health, Sun Yat-sen University, China

Abstract

Objective: To assess the current status and influencing factors of cardiovascular health (CVH) in Chinese children and adolescents.

Methods: The study sample comprised 15583 participants aged 7-17 years from a national school-based healthy lifestyle intervention study among Chinese children and adolescents against obesity (2013-2014). CVH status was estimated by 7 components, including 4 health behaviors (smoking, body mass index (BMI), physical activity and dietary intake) and 3 health factors (blood pressure, fasting plasma glucose and total cholesterol) according to the American Heart Association's criteria. The whole CVH status and each component can be classified as ideal, intermediate or poor.

Results: The percentage of ideal CVH and ideal health behaviors were estimated to be 1.7% and 3.1%, which were higher in boys than girls (1.9% versus 1.6%, 3.3% versus 3.0%, respectively). For ideal health factors, overall percentage was 53.6% (boys 52.4%; girls 54.9%). Ideal fasting plasma glucose was most prevalent (boys 94.4%; girls 97.4%), whereas a dramatically low prevalence of ideal physical activity (boys 34.6%; girls 23.9%) and healthy diet (boys 28.3%; girls 30.1%) was observed. Approximately one tenth exhibited obesity (10.2%) and poor blood pressure (9.0%). Younger age, no parental related diseases, high paternal educational level, south geographic region were the protective factors for ideal CVH.

Conclusions: The percentage of ideal CVH in Chinese children and adolescents is alarmingly low. Population-wide physical activity and dietary intake is critical to achieve adulthood CVH.

Targeting Obesity and Hypertension by Using a Shared Decision Making Model to Improve Sleep Quality in Minority, High Risk Patients

Humberto G. Mendoza*, Zerremi Caga-anan, Masood A. Shariff, Zeus C. Castro, Shama Lalani, Cristabel Robles, Leandro R. Ramirez, Balavenkatesh Kanna and Maria Espejo

New York City Health + Hospitals in Affiliation with Weill Cornell Medical College, NY, USA

Abstract

Introduction: The focus of our non-blinded, prospective pilot study is to develop process improvement methodologies by evaluating the effectiveness of a shared decision-making (SDM) and conventional usual decision-making (UDM) models to target obesity and hypertension in minority populations of the Bronx, NY. SDM interventions create a dialogue between provider and patient, synergizing the preferences of the patient with an evidence-based approach to clinical practice.

Methods: Adults above 18 years old were recruited and randomized to an SDM or UDM group. The Pittsburgh Sleep Quality Index Questionnaire (PSQI) was used to characterize sleep habits and personal stressors during visits at enrollment, 3-months, and 6-months. A PSQI score greater than 5 reflects poor sleep quality, while a score equal to or less than 5 reflects good sleep quality. SDM patients chose one of six behavioral changes and received designated interventions beyond the scheduled clinic visit for the duration of the study.

Results: Of the 67 patients were enrolled, 27 patients had completed their 6-month follow up at the time of this study. The rates of crossover for SDM/UDM were respectively 27% and 18.8%; wherein, a crossover refers to those patients who began with "poor sleep quality" and improved to a score reflecting "good sleep quality" by 6-months.

Conclusion: Although both UDM and SDM approaches proved effective in improving sleep quality, SDM-type interventions were superior in those who began with poor sleep quality. These findings are encouraging to further our efforts in tackling the concerning rise in obesity and hypertension in minority populations.

An FABP4-DNMT1 Crosstalk is Essential for Obesity-Promoted AML Leukemogenesis

Fei Yan¹, Na Shen¹, Jiuxia Pang¹, Na Zhao¹, Aref Al-Kali², Mark R. Litzow² and Shujun Liu^{1*}

¹The Hormel Institute, University of Minnesota, 801 16th Avenue NE, Austin, MN, USA

²Hematology Division, Mayo Clinic, 200 1st Street SW, Rochester, MN, USA

Abstract

Obesity increases the mortality and morbidity of cancers, yet the underlying mechanisms remain elusive. Acute myeloid leukemia (AML) is a lethal disease for most patients. However, the knowledge gap on molecular causes of AML progression hampers the development of effective quality improvement interventions. Here, we show that high-fat diet-induced obese mice exhibit elevated levels of fatty acid binding protein 4 (FABP4), interleukin-6 (IL-6), DNA methyltransferase 1 (DNMT1) and global DNA methylation compared to lean subjects. Upregulation of FABP4 and DNMT1 is positively correlated and predicts poor prognosis in AML patients. Importantly, leukemia burden is much higher in obese AML patients and in high-fat diet-induced obese mice than lean counterparts. We demonstrate that obesity-related FABP4 upregulation accelerates AML growth through IL-6-dependent DNMT1 overexpression and subsequent methylation-silenced tumor suppressor gene p15INK4B in AML cells. In addition, DNMT1 upregulation increases VEGF-mediated FABP4 production. Further, FABP4 blockade, either by siRNA, by a selective inhibitor BMS309403 or by genetic deletion, suppresses AML cell colony formation, induces cell differentiation and impairs leukemic disease progression in mouse models of leukemia. Mechanistically, FABP4 deactivation results in global and gene specific DNA hypomethylation and reactivation of p15INK4B. Our findings reveal a vicious loop of FABP4/DNMT1 in the control of AML cell fate in obesity and provide a strong rationale for developing epigenetic therapies that use FABP4 inhibitors alone or in combination with other treatments. Because deregulation of FABP4 and DNA methylation is observed in other cancers, this approach may be extended to the treatment of other human malignancies.

Low Level Laser to Improve Fat Loss in Patients on VLC Ketogenic Diet

Cesar Lara

Center for Weight and Age Management, FL, USA

Abstract

I have dedicated the last 15 years of my professional life to the understanding of the etiology and treatment of obesity, and in the process empower patients to take control of their lives by learning the principles of healthy eating and lifestyle modification. In my pursuit I developed an interest in new technologies that can augment and improve the release of excess fat, specifically for weight-loss but also for contouring the body. In that realm, I discovered the low-level green light laser by Verju, which has had remarkable results in three level 1 double blind clinical studies. When I first discovered it at a conference of the Obesity medicine association, I thought it was too good to be true. How can a person be put under a laser light, have no risk of problems, and in 6 treatments of 30 minutes over two weeks loose an average of 6.2 inches of fat? And to my astonishment these level one studies, required that the patients not change their usual and customary diets or their exercise routines, if they were doing anything at all. As I did my due diligence, I was happy to know that the studies were legit and subsequently acquired one for my clinics. Over the past 16 months, we have been using the Verju in patients that just walk into the practice and want to contour their bodies or to lose inches of fat, the majority do our weight management program which comprises of a very low calorie ketogenic nutritional plan. Having been in bariatric practice full time with multiple centers in Florida, speaks to the success of our nutritional plan and program. However, since adding the low laser as an option for patients, we have seen significant improvement in the inches of fat loss. The beauty of the low laser is that it is non-invasive, has no down time and for those that are not interested in going through a rigorous lifestyle modification, say a patient who needs to get into an outfit for a wedding in 3 weeks, we can help them with minimal requirements from their usual and customary habits. However, those results may not last long as they didn't change their ways and the inflammatory obesogenic diet will eventually get the best of them. On the other hand, for those that do want to change their lifestyle and do our program, they will see faster and long-lasting results.

From a medical perspective, I like the fact that when doing a ketogenic diet and using the low-level laser, their fat loss is greater, and the ratio of muscle loss is less. These patients actually loose fat primarily and hence a bigger volume or more inches lost. The patients are very happy, as they see results. As an added benefit the low-level laser is also been helpful in contouring to help get rid of fat bulges in the tummy, arms, hips, thighs, buttocks and love handles. Plus, it also helps smooth out skin, and as such it has level 1 double blind studies supporting the effectiveness in treating cellulite as well. In conclusion, I intend to share the success of ketogenic nutritional plan and the use of low level laser to improve fat loss.

Bile Acids and Glucose Metabolism After Metabolic Surgery

Royce P. Vincent

King's College Hospital NHS Foundation Trust, London, United Kingdom

Abstract

In recent years bile acids have been identified as metabolic molecules which play a significant part in glucose metabolism amongst others. There is now well-established evidence that these metabolic effects are mediated by bile acids differentially activating the nuclear receptor, farnesoid X receptor (FXR) and the G protein-coupled membrane receptor (TGR5). Thus, the role of bile acids is now extending beyond its traditional one as mediators of lipid absorption and cholesterol metabolism. This session will provide an overview of the interplay between bile acids and incretin hormones, laboratory analysis of bile acids as well as explore how bile acids in part could be attributed to the improved glycaemic control after bariatric (metabolic) surgery.

Stimulants for the Control of Hedonic Appetite

Alison Poulton*, Bernard Champion and Emily Hibbert

Sydney Medical School Nepean/The University of Sydney, Australia

Abstract

Despite being preventable, the costs of obesity continue to rise, and new treatment approaches are needed. Excessive hedonic appetite may be overcome by the executive functions of the prefrontal cortex exerting greater behavioral control in resisting the drive to over-eat and experience the easy reward. This requires motivation, an attribute often lacking in obesity. The commonly observed obesity comorbidity of attention-deficit/hyperactivity disorder (ADHD) raises questions about a common causality, with executive functioning deficits and reduced impulse control occurring in both conditions. Stimulants such as dexamphetamine enhance motivation and improve behavioral functioning and have a good safety record in treating ADHD. Dexamphetamine is also a potent appetite suppressant. Our aim is to evaluate dexamphetamine for treating obesity, emphasizing the improved executive functioning and decision-making acting synergistically with the appetite suppression, with a view to establishing beneficial behavior patterns, such as taking regular exercise and less snacking.

We conducted a pilot study in which 12/14 obese adults completed a 6-month course of treatment with dexamphetamine. The participants (8 women and 6 men aged 29-62 years, baseline weight 102.4 ± 15.6 kg, BMI 35.6 ± 4.5 kg/m²) lost an average of 10.6 ± 8.4 kg and 3.8 ± 3.1 kg/m² ($p < 0.001$). All reported increased energy and ability to concentrate. The only dose-limiting symptoms were mood changes (2) and insomnia (2). None had drug craving on ceasing dexamphetamine. Subsequent weight regain was a problem for 9, but one woman who lost more than 30kg continued to exercise and lose weight until she was in the healthy range. We are now testing dexamphetamine versus placebo.

Obesity and Cancer Treatment by Targeting Adipocyte Progenitors

Mikhail G. Kolonin*, Alex Daquinag, Fei Su and Zhanguo Gao

Institute of Molecular Medicine, University of Texas Health Science Center, Houston, TX, USA

Abstract

Changes in the relative abundance of thermogenic beige adipocytes and lipid-storing white adipocytes in adipose tissue underlie the progression of obesity and metabolic disease. We have discovered that mouse and human adipose tissue contains distinct beige and white adipocyte progenitor populations marked by PDGFR α or PDGFR β expression, respectively. Our recent report suggests that adipocyte lineage specification and metabolism can be modulated through PDGFR signaling. We have also developed 'hunter-killer' peptides, composed of a cell surface receptor-binding domain and a pro-apoptotic domain, for targeted ablation of cells in adipose tissue. A hunter-killer peptide D-WAT, targeting PDGFR β + white adipocyte progenitors, suppresses high fat diet-induced obesity development and enables maintenance of active metabolism. D-WAT also suppresses tumor growth and synergizes with cancer chemotherapy by disabling adipose stromal cell contribution to tumor microenvironment. Another compound, Adipotide, targeting endothelial cells and adipocytes in white fat, reverses obesity in several animal models and has shown promise in a clinical trial. In unpublished studies, we have developed a hunter-killer compound D-BAT, based on a peptide that targets brown fat tissue, which may relieve hypermetabolic conditions. New experimental approaches to fat tissue composition and function control will be discussed.

Prevalence and Factors Associated with Dyslipidemia in Adults in the Urban Parishes of the City of Cuenca, Ecuador

Susana Peña Cordero, Carlos Arévalo, Patricia Vanegas* and Catalina Torres

Catholic University in Cuenca, Ecuador

Abstract

Nowadays, dyslipidemia is a public health issue; it is caused by many factors and it is associated to a higher prevalence in obese patients with arterial hypertension.

Objective: To determine the prevalence and the factors associated to dyslipidemia in the urban population of Cuenca, 2015-2016.

Materials and Methods: Descriptive, analytic, cross-sectioned study. The sample was confirmed by 399 inhabitants. The following aspects were evaluated: lipidic profile with the classification of ATP III, blood pressure, nutritional status with the body mass index.

Results: It was determined that 37.1% of adults in the urban parishes studied presented dyslipidemia, 11.3% presented arterial hypertension, 13.3% declared they were active smokers and 37.1% presented mixt dyslipidemia. There was a statistically significant relationship between mixt dyslipidemia with: married people or in free union (OR 1.82 IC 95% 1.17 - 2.82, $p = 0.007$), males (OR 1.61 IC 95% 1.01 - 2.55, $p = 0.043$), older than 40 (OR 4.25 IC 95% 2.59 - 6.98, $p = 0.000$), overweight or obese (OR 3.45 IC 95% 2.19 - 5.43, $p = 0.000$), and active smokers (OR 2.55 IC 95% 1.16 - 5.60, $p = 0.016$).

Conclusions: Mixt dyslipidemia is correlated with the nutritional status diagnosis, which are higher in males.

Associated Factors of Metabolic Syndrome in Urban Parishes of the City of Cuenca, Ecuador

Susana Peña Cordero*, Carlos Arévalo, Patricia Vanegas and Catalina Torres

Catholic University in Cuenca, Ecuador

Abstract

Metabolic syndrome encompasses noncommunicable diseases that have had a notable increase in recent years. Therefore, it has become a public health problem.

General Objective: To determine the prevalence of the metabolic syndrome and the associated factors in the urban population of the City of Cuenca-Ecuador, year 2018.

Materials and Methods: Observational, cross-sectional analytical descriptive study conducted in the urban population of the city of Cuenca, universe of 2,23,798 inhabitants and a sample of 399, chosen in a simple random manner. A form of data collection previously validated that allowed the analysis of the study. These data was processed in a statistical package like SPSS 15,000 with frequency and association tables.

Results: The prevalence of the metabolic syndrome is 62.2% in women and 37.9% in men, 38.6% in young adults with an abdominal obesity of 72.7% the cholesterol ranges determined with the APTIII technique. According to the cut-off points it was determined that 31.8% had cholesterol values between 200-239 mg and 21.1% had values higher than 239 mg/dL.

Conclusions: It can be determined that the found percentage of this pathology in an urban population corresponds to similar data found in other studies of countries in similar conditions. It was more notorious in women more than in men.

Apelin and Chemerin as a Promising Adipokines in Children with Type-1 Diabetes Mellitus

Safinaz E. El-Toukhy^{1*}, Ali A. Ali² and Rehab A. Selim²

¹Medical Biochemistry Department, National Research Centre- Cairo- Egypt

²Childhood Department, National Research Centre- Cairo- Egypt

Abstract

Apelin is a novel adipocytokine produced by white adipose tissue that binds the APJ receptor with high affinity. Apelin peptides have been shown to have role in many biological functions in mammals including neuroendocrine, cardiovascular, and immune systems. It can act via autocrine, paracrine, endocrine, and exocrine signaling. Elevated blood apelin concentrations were reported in obese animals and humans. An alternative but not mutually exclusive proposition is that insulin resistance reflects the nature of innate and adaptive immune responses that lead to β -cell destruction and T1DM. Adiposity and insulin resistance that increasingly recognized in childhood are features of the metabolic syndrome associated with increased cardiovascular mortality in adults. Consequently, it is important to understand the factors related to adiposity and insulin resistance in children with T1DM.

Chemerin is a novel chemokine and adipokine with a described role in host survival defense, including complement fibronolysis and coagulation. Although first described as a chemokine occurring in fluids during inflammatory processes such as cancer and rheumatoid arthritis chemerin is also expressed in adipose tissue. Higher chemerin release was associated with lower insulin sensitivity of lipogenesis and lower insulin-stimulated antilipolysis.

The present study aims to evaluate both adipokines to investigate the association with body mass index and its correlation with diabetic complications.

Utilizing the Rate Your Plate Assessment with a Shared Decision Making Approach to Target Obesity and Hypertension by Improving Dietary Choices

M Espejo, B Kanna, Zerremi Caga-anan¹, Humberto G. Mendoza, Masood A. Shariff, Zeus C. Castro, Shama Lalani¹, Cristabel Robles, Leandro R. Ramirez and Maryanne Guerrero

Lincoln Hospital, New York City Health + Hospitals in Affiliation with Weill Cornell Medical College, Bronx, NY, USA

Abstract

Introduction: The aim of our current study is to evaluate the outcome of SDM versus Usual Decision-Making (UDM) in these two minority populations in the Bronx. This study provides support to the value of using SDM techniques as an effective method for behavioral change that Physicians can incorporate into their practice. Our novel research approach applies the SDM method to Latin and AA populations. This Phase II trial allowed us to identify and confirm domains where these two populations can effectively modify their behaviors to improve their BMI, blood pressure and reduce their risk for cardiovascular disease.

Methods: A prospective randomized study was conducted using validated questionnaires that collected quantitative data. A Rate Your Plate (RYP) survey was chosen to evaluate diet nutritional value. Scores range from 23 to 69 with a higher score denoting better diet nutritional value. The survey was completed during the initial encounter with follow-up at 3 and 6 months.

Results: 67 patients were enrolled (AA: 32 Latinx: 35). At the initial encounter, there was no significant difference between SDM and UDM scores (51.7 ± 9.4 vs 50 ± 9.9 , $p = 0.4853$). At 3 months, both showed improvement (52.9 ± 10.7 vs 51.3 ± 11.4 , $p = 0.604$). At 6 months, the SDM cohort showed better selection choices compared to UDM in RYP scores without significance (56.5 ± 7.3 vs 52.6 ± 9.3 , $p = 0.181$).

Conclusion: Although not statistically significant, there was greater improvement in the SDM cohort vs UDM. In particular, there was a larger relative change for the RYP scores in the SDM cohort.

Academic-Community Partnership Development to Enhance Program Outcomes in Underserved Communities: A Case Study

Nick Harris^{1,2*}, Meg Skizim^{1,2}, Claudia Leonardi^{1,2} and Richard Scribner^{1,2}

¹Dillard University of New Orleans, LA, USA

²Louisiana State University, LA, USA

Abstract

A community-academic partnership was developed to assess community needs and restructure a variety of community-based programs that provide services to underserved communities in New Orleans, Louisiana. The community and academic partners utilized five phases to assess community needs and restructure programs:

1. Meetings
2. Narrowing the scope of community programs
3. Data collection and analysis
4. Emphasizing target programs
5. Improving sustainability through grant submissions

Overweight or Obesity Influence in Physical Activity and Physical Fitness

Flor de María Cruz Estrada¹, Patricia Tlatempa Sotelo^{1,2}, Roxana Valdés-Ramos¹, Aldo Hernández Murúa³, Rafael Manjarrez-Montes-De-Oca^{1,2} and Miguel Ángel Nieto Castillo⁴

¹School of Medicine, Autonomous University of the State of México (UAEMéx), México

²School of Behavioral Sciences, Autonomous University of the State of México (UAEMéx), México

³Higher School of Physical Education, Autonomous University of the State of Sinaloa (UAES), México

⁴Social Security Institute of the State of Mexico and Municipalities (ISSEMyM), México

Abstract

Overweight and obesity are chronic noncommunicable diseases that have generated a worldwide pandemic of multifactorial etiology. These conditions can occur from childhood to adulthood. Overweight children are more likely to become obese adults with a high probability of suffering complications, including disability or premature death. According to WHO as of October 2017, about 2.8 million people die from overweight or obesity; however, people who suffer from them during their life suffer complications or consequences derived from these pathologies. Programs in the health and education sector have been considered for the prevention and treatment of overweight and obesity. It has been shown that physical activity, in addition to influencing as a protective factor against metabolic diseases, helps weight loss by an integration of regular exercise at a certain intensity in daily life. Physical activity will then achieve that the subject who carries out a workout in order to lose body fat, gain lean mass and improve their physical fitness, making it healthy and improving in turn the different systems of the body that collaborate substantially in the ideal achievement of daily activities, optimizing the quality of life of the subject.

Prevalence of Obesity, Diabetes Mellitus, Hypertension and Associated Risk Factors in a Mining Workforce, Democratic Republic of Congo

Paul Makan Mawaw¹, Thierry Yav¹, Olivier Mukuku², Olivier Lukanka¹, Patrick Mumba Kazadi³, Daniel Tambwe⁴, Jules Omba⁵, Jean-Baptiste Kakoma⁶, Michael John Bangs⁷ and Oscar Numbi Luboya¹

¹Department of Public Health, University of Lubumbashi, Democratic Republic of Congo

²Department of Research, High School for Medical Technics of Lubumbashi, Democratic Republic of Congo

³Occupational Health Clinic, International SOS Tenke Fungurume Mine, Democratic Republic of Congo

⁴International SOS Clinic, Kinshasa, Democratic Republic of Congo

⁵Anglo-Gold Ashanti, Mongbwalu Clinic, Democratic Republic of Congo

⁶Department of Gynecology and Obstetrics, University of Lubumbashi, Democratic Republic of Congo

⁷Freeport/International SOS Public Health and Malaria Control, Kuala Kencana, Papua, Indonesia

Abstract

Introduction: The burden of non-communicable diseases (NCDs) is increasing in low and middle-income countries (LMIC). According to World Health Organization (WHO) the largest increase occurs in Africa. Obesity, diabetes mellitus and hypertension (ODH) are major risk factors for cardiovascular diseases, causing nearly 18 million deaths worldwide. Various risks associated with mining as an occupational activity are implicated in NCDs' occurrence. This study describes baseline prevalence of ODH and associated risk factors in the workforce of Tenke Fungurume Mining (TFM), in southern Democratic Republic of Congo.

Methods: A cross-sectional study was conducted on a sample of 2,749 employees' and contractor's occupational health files for 2010. Socio-demographic, occupational, medical, anthropometric and behavioral characteristics were collected and assessed. ODH's disease status was based on WHO criteria. A multivariate logistic regression model was used.

Results: Overall prevalence of ODH was 4.5%, 11.7%, and 18.2% respectively. Proportions of pre-ODH were 19.7%, 16.5%, and 47.8% respectively. Age, professional grade, nature of work, gender and reported alcohol use increased prevalence of ODH. Smoking 10 or more cigarettes daily increased rates of diabetes and hypertension, while decreasing obesity.

Conclusion: Rates of ODH and associated risk factors are higher in the TFM workforce, than in the general DRC population. This is likely reflective of other mining sites in the country and region. It is evident that ODH are associated with various socio-demographic, occupational, anthropometric, biomedical and behavioral risk factors. An NCDs prevention program and close monitoring of disease and risk factors trends are needed in this population.

The Effects of Bariatric Surgery-Induced Weight Loss on Adipose Tissue in Morbidly Obese Women Depends on the Initial Metabolic Status

Natalia Moreno-Castellanos¹, Rocio Guzmán² and María del Mar Malagón²

¹Grupo de genética Humana-UIS, Escuela de Medicina, Universidad Industrial de Santander, Bucaramanga, Colombia

²Instituto Maimónides de Investigación Biomédica de Córdoba /University of Córdoba, Córdoba, Spain

Abstract

Introduction: Bariatric surgery (BS) is an effective alternative for reducing calorie absorption and altering satiety signals. The beneficial effects of BS include weight loss and reduction in the incidence of diabetes. However, the long-term adaptive changes occurring in adipose tissue (AT) after BS have not been fully established. To identify candidate markers associated with the loss of fat mass and the improvement of insulin sensitivity, we characterized the proteome of subcutaneous adipose tissue of morbidly obese subjects before and after BS.

Methods: Abdominal subcutaneous adipose tissue (SAT) samples were obtained from morbidly obese women (n = 18) before and 13.3 ± 0.37 months after BS. Obese women were stratified into two groups: normoglycemic (NG; Glu < 100 mg/dl, HbA1c < 5.7 %) or insulin resistant (IR; Glu 100-126 mg/dl, HbA1c 5.7-6.4 %) (n = 9/group). A multi-comparative proteomic analysis was employed to identify differentially regulated SAT proteins by BS and/or the degree of insulin sensitivity. Serum levels of metabolic, inflammatory, and anti-oxidant markers were also analyzed.

Results: Before surgery, NG and IR subjects exhibited differences in AT proteins related to inflammation, metabolic processes, the cytoskeleton, and mitochondria. BS caused comparable weight reductions and improved glucose homeostasis in both groups. However, BS caused dissimilar changes in metabolic enzymes, inflammatory markers, cytoskeletal components, mitochondrial proteins, and angiogenesis regulators in NG and IR women.

Conclusions: BS evokes significant molecular rearrangements indicative of improved AT function in morbidly obese women at either low or high metabolic risk, though selective adaptive changes in key cellular processes occur depending on the initial individual's metabolic status.

Funding: "Vicerrectoria de investigación y extensión" from Universidad Industrial de Santander for supporting the project and J. Andalucía/FEDER (CTS-6606), and CIBERobn (ISCIII)

The Effect of Tribulus Terrestris on Obesity-Related Hypertension Through JAK2/STAT3 Pathway

Yue-Hua Jiang

Affiliated Hospital of Shandong University of Traditional Chinese Medicine, Jinan 250011, China

Abstract

Overweight predicts future development of hypertension. We devoted to developing natural medicine that can effectively control weight gain and blood pressure. Tribulus terrestris (TT) is an herb (Zygophyllaceae) with a wide distribution in many subtropical regions. It is usually used as a cardiogenic, diuretic, aphrodisiac and herbal rehabilitation after stroke in traditional Chinese medicine. However, little is known about the effects of TT on obesity-related hypertension.

Obesity-related hypertensive rats were induced by chronic high-fat diet (45%) for 20 weeks and then treated with ethyl acetate extracts of TT (2.5 mg/kg/d) for 8 weeks intragastrically. After 8-week TT administration, systolic pressure, diastolic pressure and heart rate of rats was decreased (P < 0.05). The level of serum NO was increased, while the proteins were identified and quantified in aorta and 2767 proteins were identified and quantified in hypothalamus by label-free LC-MS/MS quantification. The proteomic analysis suggested that TT could enhance the resistance of rats against energy accumulation and hemorrhagic tendency, improve the fatty acid metabolism, response capabilities of acute phase reactants and immunity, in which Jak2/Stat3, PPAR and Erk pathways played an important role. Besides, the tendency of Alzheimer's disease and Huntington's disease

decreased in rats after 8-week TT treatment, indicating the neuroprotective effects of TT. Afterwards, AG490 (antagonist of Jak2) (2 $\mu\text{mol/ml}$, *5 μl) was injected into the third ventricle, rats were given TT for 8 weeks intragastrically. TT lost its most effectiveness when AG490 exposure.

Antioxidant Activity and *in-vitro* Bioaccessibility of Crackers Enriched with Mahaleb and Turmeric

Elif Yildiz*, Gizem Yoruk, Duygu Gocmen and Ozan Gurbuz

Uludag University, Turkey

Abstract

With the impact of developing technology and changing living conditions, consumption habits of individuals has been changed therewithal need of nutrition has been meeting by fast food products and snack foods. For this reason, with aim of obtaining healthier and more natural products, fortification of cereal based products has importance on nutrition.

Wheat flour of cracker content replaced with turmeric (*Curcuma Longa L.*) and mahaleb (*Prunus Mahaleb L.*) powders on the purpose of forficate to nutritious value of crackers. Turmeric powder is known with yellow color (content of curcumin pigment) and has been using in varied treatment of health by means of antioxidative content. Mahaleb powder is widely used in bakery products as a delicious spice additionally has a strong phenolic content. Replacing applied in two different levels (5 and 7.5%, w/w). Antioxidant capacity (DPPH, ABTS, CUPRAC), total phenolics and bio accessible phenolics content of crackers were determined both extractable and hydrolysable phenolics. Incorporation of crackers was increased total phenolic content, antioxidant capacity and bioavailability of crackers alongside the improving taste and visual properties. The antioxidant contents of all the samples increased compared to the control, however the maximum increased obtain 7.5% turmeric and 7.5% mahaleb replaced sample. Herewith mahaleb and turmeric supplemented crackers could be defined as value-added functional product and take its place as a healthy snack in daily nutrition.

Role of Androgen/Androgen Receptor in Exercise-induced Improvement of Glycolipid Metabolism in Obese, Diabetic and Atherosclerotic Rats through PPAR γ -ATGL and LPL Pathways

Li-Jun Yin*, Xiao-Jing Lin, Hong-Fang Yang and Xiao-Hui Wang

School of Kinesiology, Shanghai University of Sport, China

Abstract

Objective: Recently, effect of androgen/androgen receptor (AR) on glycolipid metabolism improvement in obesity and its related diseases has attracted more attentions. As AR target gene, peroxisome proliferator activated receptor γ (PPAR γ) plays a vital role in regulating glycolipid metabolism through key enzymes adipose triglyceride lipase (ATGL) and lipoprotein lipase (LPL). But whether androgen/AR exerts roles in aerobic exercise-induced improvement of glycolipid metabolism and whether the roles were associated with PPAR γ -ATGL and LPL were still unknown. This study was to explore this question.

Methods: After establishing obesity (OB), diabetes (DM) and atherosclerosis (AS) model rats, SD male rats were randomly divided into seven groups of 8 rats each: control (Con), OB, DM, AS, OB plus exercise (EOB), DM plus exercise (EDM) and AS plus exercise (EAS). The rats in EOB, EDM and EAS groups underwent 4-week aerobic exercise. Body weight, serum testosterone, glycolipid metabolism index and the protein levels of AR, PPAR γ , ATGL, and LPL in liver and gastrocnemius of rats were detected.

Results: (1) OB, DM and AS rats showed disorders of glycolipid metabolism, which were reversed by exercise; (2) The decreased serum testosterone in OB, DM and AS rats were increased in EOB and EAS (but not EDM), and the AR levels were enhanced in EDM (liver), EAS (liver and gastrocnemius), accompanied with the increases of PPAR γ , ATGL and LPL.

Conclusion: Androgen/AR contributed to exercise-induced improvement of glycolipid metabolism in obese, diabetic and atherosclerotic rats, which might be mediated through PPAR γ -ATGL and LPL pathways.

Life After NBC's "The Biggest Loser": Experiences and Perspectives of Former Reality TV Contestants

Darren D. Moore¹, Clinton Cooper², Toiya Williams² and Kai Zwierstra³

¹Alliant International University, San Francisco, CA, USA

²Mercer University School of Medicine, Macon, Georgia, GA, USA

³University of New England, Biddeford, Maine, ME, USA

Abstract

Utilizing Qualitative Description influenced by aspects of phenomenology, we conducted fifteen open-ended, semi-structured interviews with former contestants of NBC's "The Biggest Loser." The purpose of the study was to explore experiences of significant weight loss. We focused on challenges, emotional well-being, and relational dynamics of contestants transitioning through their weight loss journeys, which included what happened after the show was completed. Further, we analyzed perspectives regarding the utility of Marriage and Family Therapists (MFTs) in working with this population. In the study, three themes emerged which included: (1) Living at the ranch: its reality TV, not reality; (2) After the confetti falls: Post-Traumatic Reality TV Syndrome and The Whiplash Effect; and (3) Therapeutic treatment: Much needed but nowhere to be found. The study includes a rich description of the data, as well as a discussion of clinical implications.

Psychosocial Determinants of Obesity Prevention Behaviors in Chinese Americans: East and West Coast Comparisons

Doreen Liou

Montclair State University, Department of Nutrition and Food Studies, Montclair, NJ, USA

Abstract

The obesity epidemic is a global health issue affecting all population groups including Chinese Americans. A cross-sectional survey was conducted to ascertain obesity risk reduction behaviors and their psychosocial determinants in Chinese Americans residing in Los Angeles (LA) County, California. A convenience sample of 203 (32% males and 68% females) aged 18 to 60 years (mean age 38.1) completed a self-administered questionnaire. Participants were recruited from diverse social, academic and cultural institutions. Data from LA participants were compared with data published on Chinese Americans in the New York area (n = 447) using the same survey instrument. A validated survey instrument consisted of 19 obesity risk reduction behaviors and psychosocial constructs derived from the Theory of Planned Behavior and Health Belief Model. Participants reported food behaviors related to weight management, portion size control, consumption of plant-based foods, and physical activity. In the LA sample, regression analysis indicated that 38.7% of the variance in behavior was accounted chiefly by self-efficacy and attitude. T-test comparisons revealed higher frequency of health behaviors (e.g.: portion size control, intake of plant-based foods, physical activity) and more positive attitudes among the LA participants. In contrast, the NY sample perceived greater barriers in performing these behaviors. Nutrition professionals working with Chinese Americans need to assess their efficacy to engage in obesity risk reduction behaviors such as portion size control and consuming nutrient-dense foods. In fostering positive attitudes toward these health behaviors, intentions need to be strengthened while mitigating perceptions of barriers.

Low-Carb Diets in the Treatment of Obesity-History and Actual Situation

Udo Rabast

German Academy of Nutritional Medicine, Germany

Abstract

Low carbohydrate diets are a matter of controversy for more than one century. From time to time this kind of diets are highly popular. In between also opponents are seeing this therapeutic option is not only negative. Low-carb-diets are associated with the name of Atkins and his treatment method with an unlimited supply of fat and protein combined with the extreme reduction of carbohydrates. Initially only 20 g of carbohydrates are allowed. Although energy supply is unlimited obese people will lose weight. If one main nutrient (carbohydrates or fat) are eliminated in the daily diet, it will be impossible to have the same energy intake as usual. So, a caloric restriction of 600-800 kcal/day will result. Supporter of low-carb-diets don't see this as the

only reason for the weight reduction. In own comparative studies with energetically limited, iso-energetic diets we found the higher weight reduction with the low- carbohydrate- in comparison with the high carbohydrate diets. Newer studies confirmed the results. Some metabolic effects are positive (decrease of insulin and triglycerides, increase of HDL-concentration). Negative effects are the increase of ketone bodies and uric acid. Under discussion are the risks for uric acid- and oxalic-acid stone formation in the kidney. There is no ideal solution for the treatment of obesity. Low-carbohydrate diets are only one therapeutic option. Positive is the high value of satiety. This improves the adherence to the diet and compared to other dietetic treatments a more pronounced weight loss can be expected.

Feasibility of Using the ‘Spacing Effect’ as Part of an Interventional Strategy to Curb Overweight and Obesity Among a Representative Sample by Improving Their Knowledge, Dietary Habits, and Physical Activities

Sam Aaseer Thamby^{*}, Ng Yen Ping¹, Ganesh Pandian¹, Dayana Nicholas¹, Sireesha Parachuri¹ and Azmi Bin Sarriff²

¹Faculty of Pharmacy, AIMST University, Malaysia

²School of Pharmaceutical Sciences, Universiti Sains Malaysia, Malaysia

Abstract

Proportion of overweight and obesity cases are increasing in Malaysia, despite numerous interventional public health campaigns. We incorporated a new modality called ‘Spacing Effect’ to repeatedly reinforce key concepts pertaining to overweight and obesity as part of our interventional strategy to curb overweight and obesity among a selected representative sample, in addition to the pre-validated, questionnaire and educational pamphlet. Our main objective was to utilize spacing effect in curbing the issue of overweight and obesity by estimating the changes in knowledge, dietary habits, and physical activities, among the selected representative sample. Utilizing spacing effect would markedly improve overweight and obese respondents’ knowledge, which would positively impact their dietary habits and physical activities and aid them in reducing weight and maintaining a healthy BMI. This study was exploratory, prospective, and descriptive with a gap of six months between each phase. The representative target study sample was sourced from among Kedah state (Malaysia). The results revealed that the respondents’ weight, BMI, knowledge, dietary habits and physical activities did improve significantly during the study. On comparing P3 v P1, the percentage value improvement in knowledge, dietary habits, physical activities, total score, weight, and BMI were 35.0, 43.33, 17.85, 35.71, 10.0, and 9.11 respectively. Respondents’ score grades showed increase in ‘moderate’ and ‘good’ grades in P2, increase in ‘good’ grades in P3, while ‘poor’ grades dropped markedly at the conclusion of P3. The results showed that it is feasible to use spacing effect as part of the interventional strategy to combat the overweight and obesity epidemic.

An Apolipoprotein B100-targeting Peptide Vaccine Prevents Obesity in Mice

Hyo Joon Kim^{1,2*}, Moon Kyung Choe¹, Young Sik Kim³ and Bert Binas¹

¹Hanyang University-ERICA, South Korea

²SJBiomed Inc. Ltd, South Korea

³Korea University-Ansan Hospital, South Korea

Abstract

We established for the first time that an immune-therapeutic approach directed at Apolipoprotein B-100 can dramatically prevent obesity. Although ApoB100 plays key roles in fat metabolism, its potential roles in obesity have received little interest. Here, we tested whether a novel peptide vaccine that mimics an epitope in the C-terminal portion of ApoB100 affects obesity. When adolescent mice were fed a regular chow or a high fat diet, vaccination reduced the 3-month body weight gains attributable to the increased dietary fat by 44~65%. These reductions correlated with vaccine-induced ApoB100-reactive IgG2b or IgG1 antibody titers. The vaccine prevented body fat accumulation and liver steatosis and selectively inhibited the deposition of labeled trioleate in fat tissue; antibodies from vaccinated animals specifically inhibited labeled low-density lipoprotein (LDL) uptake by 3T3L1 adipocytes in vitro by 67~86%. By contrast, the antibodies increased the fraction of LDL-endocytosing Raw 264.7 macrophages from 6.5 to 28%, without causing foam cell formation; in line with this, vaccination did not influence atherogenesis in ApoE^{-/-} mice. Thus, a vaccine that is based on a specific ApoB100 mimotope can selectively prevent obesity, at least in part by blocking lipoprotein utilization and facilitating clearance. This approach holds therapeutic promise and will be useful for dissecting lipoprotein physiology.

Investigation of the Impact of Blueberries on Metabolic Factors Influencing Health

Nilgun Istek¹ and Ozan Gurbuz^{2*}

¹Medical Park Hospital, Nutrition and Dietetic Dept., Bursa, Turkey

²Uludag University, Agricultural Faculty, Food Engineering, Bursa, Turkey

Abstract

In this study, ingestion of blueberry fruit by overweight and obese individuals, who were participating in medical nutrition therapy, was investigated. The study was designed to determine the impact on body weight and metabolism (glucose, HbA1c, TSH, total cholesterol, LDL cholesterol, HDL cholesterol, triglycerides, ALT, AST, uric acid, insulin, insulin resistance, and hemoglobin) of obese patients over a 12-week period of time.

Clients were selected based upon their participation in the clinical study as well as measurements which included: body weight, fat, fluid, muscle ratio, and biochemical parameters. The study was conducted with 54 adults (blueberry n = 27 and control n = 27). Midway through the study, the clients in the blueberry group replaced 50 g of carbohydrates with a 50 g serving of blueberries.

Blueberry fruit is one of the important antioxidant resources due to the content of anthocyanins and phenolic substances. While positive changes were observed in all values in both groups, significant differences in the intervention group were observed in BMI, insulin levels, insulin resistance, LDL, total cholesterol, and uric acid levels. At end of the trial, total cholesterol values had changed between 178.59 ± 29.42 mg/dL; 173.20 ± 33.26 mg/dL for control and blueberry groups respectively. LDL and total cholesterol (18.3-14.75%) values were found statistically significant at the end of 12 weeks in the group which added blueberries to replace carbohydrates.

Analysis of the PRIMAVERA Study: Reduxine (Sibutramine) Safety Monitoring in Patients with Alimentary Obesity

Tatiana Romantsova^{1*}, Ivan Dedov² and Galina Melnichenko²

¹I.M. Sechenov First Moscow State Medical University, Russian Federation

²Endocrinology Research Centre, Moscow, Russian Federation

Abstract

As in many other developed nations, the problem of obesity is acute in Russia, where its prevalence is 24.1% of the population (28 million people). Sibutramine, orlistat, liraglutide are all used as a pharmacotherapy of the disease. Since the administration of central-acting drugs as pharmacotherapy of obesity is the most pathogenetically justified the issue of safety of sibutramine therapy is very important. In order to implement the principles of active monitoring of the efficacy and safety of the sibutramine (Reduxin[®]) in the current clinical practice and to develop a skill of reasonable prescribing the observation program "PRIMAVERA" was conducted since November 2012 to July 2015 under the auspices of Endocrinology Research Centre and the Russian Association of Endocrinologists (NCT01773733, clinicaltrial.gov). The program "PRIMAVERA" was attended by 3095 doctors of various specialties and 98.774 patients being treated in 1272 hospitals in 142 Russian cities. The duration of Reduxine[®] treatment was determined by the attending physician and ranged from 3 months to 1 year. The BMI reducing dynamics during 3, 6, 12 months was 3.4 ± 1.53 kg/m² (average 9.5 ± 4.28 kg), 5.4 ± 2.22 kg/m² (15.0 ± 6.22 kg), 7.2 ± 3.07 kg/m² (20.0 ± 8.62 kg) respectively. The average waist circumference reduction for 3, 6 and 12 months was 6.3 ± 4.31 sm, 10.6 ± 6.30 sm, 16.0 ± 8.94 sm, respectively. It was shown that the weight loss during prolonged (more than six months) Reduxine[®] therapy under the supervision of a physician was associated with decreased levels of systolic and diastolic blood pressure and had no effect on heart rate. In "PRIMAVERA" program it was shown that the use of Reduxine[®] (sibutramine) according to approved indications is safe and effective for long-term treatment of obesity.

Laparoscopic Sleeve Gastrectomy Combined with Rossetti Fundoplication for Treatment of Morbid Obesity and Gastroesophageal Reflux

Giovanni Cesana^{*}, Stefano Olmi, Francesco Caruso, Matteo Uccelli, Stefano Cioffi and Francesca Ciccarese

Policlinico San Marco-Gruppo San Donato, Italy

Abstract

Background: Gastroesophageal Reflux (GERD) can be considered an obesity-related disease. Roux-en Y by-pass (RYBP) is considered the gold standard for its therapeutic effects on acid reflux.

Objectives: This is a retrospective study conducted at a high volume bariatric Centre in Italy (> 1000 procedures per year). The aim of the study is to assess the effectiveness of combined laparoscopic sleeve gastrectomy (LSG) and Rossetti anti-reflux fundoplication for the treatment of morbid obese patients suffering from GERD.

Materials and Methods: 40 obese patients with GERD underwent LSG-Rossetti laparoscopic fundoplication from January 1st to October 31, 2015 at our Centre. A specific informed consent was obtained. Minimum follow-up was 12 months. There were no lost at follow-up.

Results: Mean Body Mass Index (BMI) was 44.4 ± 4.7 , all patient were suffering from GERD. Mean operative time was 38 ± 6 minutes. Mortality rate was 0%. No intraoperative or medium or long-term complications were reported. Excess BMI loss percent (EBMIL%) at 1, 3, 6, 12 months was 29.3 ± 3.4 , 47.2 ± 5.2 , 64.0 ± 8.6 , 73.3 ± 9.9 . At 12 months follow up 95% of patients reported a good sense of repletion without episodes of vomiting, nausea or dysphagia.

Conclusions: Sleeve plus Rossetti fundoplication is well tolerated, feasible and safe in selected patients with good postoperative weight loss results. Following these evidences, two monocentric prospective studies will start to analyze and confirm the reported data.

Transgenerational Effects of Maternal Over-Nutrition on Offspring's Cognitive Processes and Behavioral Patterns

Barb AY¹, Navarrete E¹, Salazar AM¹, Montúfar-Chaveznava R², Ostrosky-Shejet P¹ and Caldelas I¹

¹Instituto de Investigaciones Biomédicas, Universidad Nacional Autónoma de México, Mexico

²Facultad de Ingeniería, Universidad Nacional Autónoma de México, Mexico

Abstract

Chronic malnutrition during pregnancy has been associated to structural, physiological and metabolic changes, as well as behavioral impairments in the offspring. It is critical to elucidate whether chronic over-nutrition, affect the cognitive processes and behavioral patterns of the offspring. In order to address this issue, a Food Preference Test (FPT) and a Novel Object Recognition Test (NOR), were performed on six months old European rabbits obtained from females fed with a standard diet (CON) or with a high lipids and carbohydrates diet during gestation (HLCD).

In the FPT, animals from the HLCD group ingested significantly more food than the rabbits from the CON group. HLCD males required more time to choose one of the diets. However, the sequence of behaviors associated with food consumption was similar between both groups, with the exception of grooming, that exhibited a significant increase in the frequency in the HLCD animals. In the NOR test, the HLCD rabbits exhibited a significant increase on the latency of exploration of the novel object.

Preliminary results from the FPT indicate that the subjects obtained from over-nourished females exhibit hyperphagia, however, they did not show a preference for high fat/carbohydrates diets, as suggested in studies in other species. The significant increase in the grooming behavior presented by the rabbits of the HLCD group, in the FPT test, may be considered as an indicator of the presence of stereotyped and/or compulsive behaviors.

PAPIIT 212516 and CONACYT-Fronteras de la Ciencia 398.

Hempseed Bar and its Effect on Weight and BMI in Female Adults

Mahnaz Nasir Khan

Kinnaird College for Women, Lahore, Pakistan

Abstract

Seed of Cannabis sativa L. commonly referred as Hempseed has been known for its nutritional and functional qualities for centuries. Functional attributes are due to its thermogenic effect which promotes weight loss. The objective of this research was to assess the effectiveness of hempseed for weight loss in female adults. This experimental study was carried out without

a control group with 30 volunteers, predominantly university students (90%) with mean age 21.40 + 1.78 years and BMI 27.25 + 2.01 kg/m². Preliminary dietary intake data revealed that participants routinely consumed an afternoon snack at the university contributing 348 + 5.78 kcal/day. Therefore, Hempseed bar was developed which incorporated 30 grams shelled hempseeds powder providing 50% of total bar kcal. Consumer acceptability score 4.4 + 0.52 was obtained on Hedonic Scale of 1 to 5. Hempseed bar (352 kcal) was administered to participants for 8 weeks which substituted their routine university afternoon snack, along with a Food Logbook for dietary record. Baseline and 8-week weight measures were obtained while follow up was done every two weeks where weight was recorded. Average weight loss after 8 weeks was -2.42% (P = 0.001) with mean reduction in BMI of 1.27 kg/m² (P = 0.000) was recorded post intervention while no significant difference was seen in dietary data pre-and post-intervention (P = 0.370). Thus, it may be concluded that inclusion of 30 grams hempseed as part of dietary intake may help lose weight without specific dietary modifications.

Poster Presentations

livingwellCARES and Fitscript D-Fight Fitness Unite Forces to Improve the Self-management Skills of Our Employees with Type 2 Diabetes

Joanne Chernes¹, Kathleen Roy¹, Eileen Lawless¹, Nancy Hassan¹, Stacey Lane¹, Collistus Lorde¹, Charlie O'Connell², Michael Dimenstein¹ and Jeanette Bogdan¹

¹*Yale New Haven Health System, CT, USA*

²*FitScripts, CT, USA*

Abstract

The livingwellCARES nurse care coordinators collaborated with the Fit script D-Fight Fitness Program along with the livingwell Fitness Center in February 2016 to educate and support with skills needed to better self-manage their Type 2 Diabetes. Pre and post hemoglobin A1C and a cardiac stress test were obtained from all participants. Individual and group sessions were held weekly. A 90-day free membership to the YNHHS livingwell Fitness Center was provided to all participants. The key metrics used to evaluate the success of the program were:

- * Hemoglobin A1C levels
- * Self-Blood Glucose Monitoring
- * Weight
- * Exercise requirement and commitment
- * Reduction in medication costs

The Fitscript intervention is one more step in our journey to strive for culture of health and well-being at YNHHS. This program can impact a large number of our system employees living with diabetes. The Type 2 Diabetic employee's that we have selected to engage from the livingwellCARES Program were identified according to need, commitment and motivation with end results being a lowering in their hemoglobin A1C, a decrease in their weight, an increase in their physical activity recommendations, increased stamina, a commitment to self-monitoring of their glucose levels as it relates to their exercise routine and increased knowledge in the self-management of their diabetes. This benefits health system through healthier, happier employees which leads to more productive employees, less absenteeism, decreased unnecessary emergency room utilization, avoidable hospital admissions and an overall reduction for the patient and health system (approximate annual reduction of 72% in pharmacy spend).

Plant-Based Nutrition: The Overlooked Tool for Curing Heart Disease

Mariah Madigan

Northern Ontario School of Medicine, Canada

Abstract

Cardio-metabolic disease, specifically ischemic heart disease, type-2 diabetes, obesity, and stroke, represent substantial health burdens. Despite increased longevity and a 40% decrease in cardiovascular-related mortality over the last decade, it remains the leading cause of morbidity and mortality worldwide. Key physiological factors associated with increased risk of cardiovascular disease include hypertension, hyperglycemia, dyslipidemias, physical inactivity, and poor diet. These factors are

modifiable through lifestyle changes, and nutritional intervention in the form of plant-based diets can affect this change. Since the 1950's, considerable evidence from epidemiological studies (including observational, case-control, cohort, and randomized control trials) has associated consumption of animal products with increased risk of cardio-metabolic disease, certain cancers, and all-cause mortality, whereas plant-based diets have shown effective prevention, management, and sometimes reversal of many of the 15 leading causes of death in America. Notably, a low-fat, plant-based diet is the only nutritional pattern shown to halt and reverse progression of atherosclerotic plaque in clinical trials. Plant-based diets have also shown superiority, or non-inferiority to leading medications including statins, angiotensin-converting enzyme inhibitors, and calcium channel blockers for the treatment of hypertension and dyslipidemias. Overall, data from clinical trials, as well as large, longitudinal, prospective studies paints a consistent picture showing significant correlations between diet and health, emphasizing that vegetarians and vegans live longer, with greatly lowered risk of developing most chronic diseases. Thus, use of plant-based diets as a means of prevention, management, and treatment of cardio-metabolic disease should be promoted through improved dietary guidelines/recommendations, patient awareness, and physician education.

The Application of Nordic Walking in the Treatment Hypertension and Obesity

Cezary Kucio¹, Dominika Narloch and Ewa Kucio

The Department of Physiotherapy Academy of Physical Education in Katowice, Poland

Abstract

Background: Increasing physical activity is a widely recognized method of prevention and treatment of hypertension and obesity.

Objectives: The aim of the following study was to assess the results of application of Nordic walking (NW) in the treatment of patients with hypertension and obesity.

Material and methods: Participating in the study were 30 overweight or obese men with hypertension, undergoing pharmacological treatment, randomly assigned to one of the two study groups. The first group performed NW training for 4 weeks. The second group underwent pharmacological treatment only. The value of blood pressure measured with a 24-hour AMBP monitoring device, exercise tolerance based on the duration and value of the metabolic equivalent during the exercise test, body mass and BMI value, as well as total cholesterol, LDL, HDL and triglyceride values, were measured before and after the study.

Results: The results of the study demonstrated the fact that the application of Nordic walking over the course of 4 weeks did not cause significant changes as far as the value of blood pressure. However, the training led to increased exercise tolerance, a reduced body mass and BMI value, as well as lowered triglyceride and total cholesterol levels. There were no cases of discontinuation of the training due to unwanted effects or symptoms.

Conclusions: The 4-week period of Nordic walking training did not result in the lowering of blood pressure in patients with hypertension. However, Nordic walking training did result in improved exercise tolerance, decreased body mass, as well as reduced metabolic risk factors for cardiovascular disease.

Farnesoid X Receptor (FXR) is Required for Bile Acid-induced Metabolic Benefits

Yuxin Li¹, Joseph F. Pierre², Honggang Ye², Eugene B. Chang² and Deng Ping Yin²

¹Department of Medicine, the Jingmen Second People's Hospital, Jingmen, Hubei, China

²Departments of Medicine and Surgery, the University of Chicago, Chicago, IL, USA

Abstract

Our previous report suggests that delivery of BAs to the distal intestine by bile diversion (BD) significantly improve obesity and insulin resistance along with increased primary BAs. Activation of TGR5 stimulates release of enteroendocrine hormones, enhances energy expenditure and directly and indirectly improves β -cell function and viability. However, FXR reveals two contradictory phenotypes: improving and worsening glucose homeostasis. The current study investigated if the lack of TGR5 or FXR altered metabolic phenotype and abrogated metabolic benefits induced by BD. The results showed that TGR5 deficiency was prone to high-fat diet-induced obesity (DIO), and the lack of FXR was resistant to DIO with enhanced energy expenditure and increased thermogenic genes and PPAR α . BD significantly improved hyperglycemia and glucose tolerance in WT and TGR5ko mice, but not in FXRko mice. FXR agonist (CDCA) improved glucose tolerance without alteration of body weight. Increased liver weight and steatosis was observed in LFD- and HFD-fed FXRko mice, which did not be improved by BD. Naïve

FXRko mice revealed hyperglycemia, glucose intolerance, enhanced liver PPAR α and energy expenditure without change of diet consumption. BD improved glucose tolerance and liver steatosis in HFD-fed WT and TGR5ko mice, but not in HFD-fed FXRko mice. The lack of FXR and TGR5 resulted in changes of BA synthesis and composition, and BD increased circulating total BAs and primary BAs, especial TbMCA, in WT DIO mice, which revealed a similar change in naïve FXRko mice. The lack of FXR and TGR5 also altered gut microbiota composition, and specifically, Proteobacteria was increased in LFD-, HFD- and BD-treated TGR5ko and FXRko mice. We conclude that the lack of FXR altered metabolic phenotype, BA synthesis and gut microbiota composition. Mice lacking FXR are resistance to HFD-induced obesity but develop hyperglycemia. FXR is required for BA-induced metabolic benefits.

Anti-Biofilm Efficacy of Ginger Sesquiterpene in Fighting Against *Acinetobacter baumannii* Chronic Infection

Yong-Bin Eom^{1,2*}, Hye-Rim Kim¹, Hae-Won Cho¹, Da-Seul Shin² and Hye-In Jang²

¹Department of Biomedical Laboratory Science, College of Medical Sciences, Soonchunhyang University, South Korea

²Department of Medical Science, College of Medical Sciences, Soonchunhyang University, South Korea

Abstract

Biofilm formation by *Acinetobacter baumannii* is an important virulence factor in development of chronic disease. *A. baumannii* is an emerging multidrug resistant bacterium and this pathogen in biofilms is resistant to the host's immune defenses and antibiotic therapy. So new biofilm-inhibiting strategies are clearly needed which specifically target biofilms as an alternative to the use of antibiotics. We aim to identify novel anti-biofilm and/or anti-virulence compounds in natural extracts present in edible plant Zingiber zerumbet. As a result, natural extract compounds were found to both inhibit the biofilm formation of, and to disrupt the preformed biofilms. We confirmed the reduced *A. baumannii* biofilms through crystal violet biofilm assay, confocal laser scanning microscopy (CLSM). The findings of this study suggest that ginger sesquiterpene have the potential to be a bioactive agent for use in controlling biofilm-related chronic infections.

H. pylori Infection, Endoscopic, Histological Aspects and Cell Proliferation in the Gastric Mucosa of Patients Submitted to Roux-en-Y gastric Bypass with Contention Ring: A Cross-Sectional Endoscopic and Immunohistochemical Study

Thiago De Bortoli Nogueira*, Ricardo Artigiani Neto, Jaques Waisber and Benedito Herani Filho

Federal University of São Paulo, Brazil

Abstract

Morbid obesity treatment through vertical gastropasty Roux-en-Y gastric bypass (RYGB) initially used a contention ring. However, this technique may create conditions to the development of potentially malign alterations in the gastric mucosa.

Objectives: To analyze the preoperative and postoperative endoscopic, histological and cell proliferation findings in the gastric mucosa of patients submitted to the RYGB with a contention ring.

Method: We retrospectively evaluated 33 patients undergoing to RYGB with a contention ring with more than 60 months of postoperative follow-up. We compared the preoperative (gastric antrum and body) and postoperative (gastric pouch) gastric mucosa endoscopic findings, cell proliferation index and *H. pylori* prevalence.

Results: We found a chronic gastritis rate of 69.7% in the preoperative period and 84.8% in the postoperative. *H. pylori* was present in 18.2% of patients in the preoperative period and in 57.5% in the postoperative. Preoperative cell proliferation index was 18.1% in the gastric antrum, 16.2% in the gastric body, and 23.8% in the postoperative gastric pouch. The postoperative cell proliferation index in the gastric pouch was significantly higher than in the preoperative. Higher cell proliferation index and chronic gastritis intensity were significantly associated to *H. pylori* presence.

Conclusions: After RYGB with contention ring, there was a higher chronic gastritis incidence and higher cell proliferation index in the gastric pouch than in the preoperative gastric antrum and body. Mucosa inflammation intensity and cell proliferation index in the postoperative gastric pouch were associated to *H. pylori* presence and were higher than those found in the preoperative.

Metabolically Healthy and Unhealthy Obese Patients: Phenotypic Differences and the Effectiveness of Weight Loss

Tatiana Romantsova*, Elena Ostrovskaya, Andrey Gerasimov, Tamara Novoselova, Oxana Novikova and Dinar Valiulina

I.M. Sechenov First Moscow State Medical University, Russian Federation

Abstract

Obesity is a major global risk factor for cardiovascular and metabolic diseases. However, a peculiar subset of obese individuals are normotensive and display metabolic parameters within the normal ranges - "metabolically healthy obesity" (MHO). Our goal was to assess the significance of weight loss in MHO individuals.

Our study included 77 women aged 19 to 59 years with obesity (BMI ≥ 30 kg/m²). We conducted a comparative analysis of metabolic indices, adipokines levels in 44 MHO subjects (< 2 cardio-metabolic abnormalities, IDF-criteria of metabolic syndrome) and 33 metabolically unhealthy obese (MUHO) women and assessed their dynamics in patients, who have reduced their body weight to $\geq 5\%$ in 6 months.

At baseline the levels of BMI, basal insulin, C-reactive protein, TNF-alpha, adiponectin and retinol-binding protein-4 (RBP-4) were comparable in MHO and MUHO. A significant difference between these groups was observed in terms of the index HOMA - 3.0 and 4.4 ($p < 0.05$), alanine aminotransferase - 23.49 and 37.39 U/l ($p = 0.001$), interleukin-6 - 0.76 and 1.85 pg/ml ($p < 0.05$), chemerin - 322.4 and 369.2 ng/ml ($p < 0.05$) respectively. After 6 months in the group of MHO, who reduced body weight by $\geq 5\%$ of the initial (66%) there was a significant increase of adiponectin by $4.54 + 0.83$ μ g/ml ($p < 0.05$), and a reduction of waist circumference $-8.6 + 1$ cm ($p > 0.05$), CRP $-1.7 + 0.4$ mg/l ($p < 0.05$), RBP-4 $-2.9 + 1.0$ ng/ml ($p < 0.05$) and chemerin $46.6 + 17.0$ ng/ml ($p < 0.05$).

Bening metabolic status was associated with a lower level of interleukin-6, chemerin, insulin resistance and significant reduction of several proinflammatory adipokines after weight loss.

Relationship between Genders BMI, and Knowledge of Physical Activity Nursing Students

Brunilda Subashi^{1*}, Glodiana Sinanaj¹, Denada Selfo², Rozeta Luçi² and Saemira Durmishi³

¹Research Center for Public Health, University "Ismael Qemali" Vlore, Albania

²Department of Nursing, University "Ismael Qemali" Vlore, Albania

³Department of Health Care, University "Ismael Qemali" Vlore, Albania

Abstract

Background: Overweight and obesity are major risk factors for a number of chronic diseases, including diabetes, cardiovascular diseases and cancer.

Aim: Identification of the relationship between gender - BMI and knowledge of physical activity conducted by the nursing students.

Methodology: This study was conducted in the Faculty of Public Health laboratory B201, during the period of time 16-24 Jan 2018, in the first year BScs students Nursing General & Midwifery Nurses. Randomly selected a sample of 79 students who underwent length, weight and BMI measurements through the device Electronic BMI Measuring Height Weight Scale Machine as well as filling in a simple self-administered questionnaire on physical activity.

Results: 80% of students were female and 20% male and 49% from them were 18 years old. 12% of students are overweight, 82% healthy normal and 6% underweight. 7.6% of female and 3.8% of male are overweight. Between females 9.5% are overweight and 7.9% underweight while between males 18.7% are overweight. 63% of students do physical activity, 96% of students do moderate physical activity, while 4% intensive physical activity; 33% of students do physical activity 3-4 times a week, in 45% of students, physical activity on a single day takes 30-40 minutes.

Conclusions: The overweight is related to the female gender. Most of the students are healthy normal and also carry out physical activity.

Recommendations: Encouraging students to periodically measure the weight, length and BMI calculation in order to identify early underweight, overweight and obesity, and to prevent the diseases associated with them.

Association of Sugar-Sweetened Beverages Consumption with Risk of Metabolic Syndrome in Chinese Children and Adolescents

Shuyi Li¹, Muqing Cao¹, Hao Zheng¹, Chen Yang² and Yanna Zhu¹

¹Department of Maternal and Child Health, School of Public Health, Sun Yat-sen University, China

²Department of Physical Examination, the First Affiliated Hospital of Sun Yat-sen University, China

Abstract

Background: The association between sugar-sweetened beverages (SSBs) intake and the risk of metabolic syndrome (MetS) is not clear. We aim to explore the relationship in Chinese children aged 7-18 years at a national level.

Methods: There were 16,743 children aged 7-18 years recruited from a multi-center national survey in 2013, China. Anthropometric parameters were measured, and fasting blood were collected for testing glucose and lipids. MetS was defined by International Diabetes Federation adapted for children. The information of SSBs intake, dietary intake and physical activity was obtained by self-reported questionnaire. Questionnaire was answered by the caregiver if the child aged below nine years. Logistic regression models were used to estimate the association between SSBs and MetS and its components.

Results: There were 13,676 children completed the study, among which 31.4% had high servings SSBs intake (> 0.3 servings/day). The overall prevalence of MetS was 2.3% in children aged 7-18 years. The odds ratio for the prevalence of MetS and abdominal obesity in high servings SSBs group were 1.40 (95%CI: 1.01, 1.94, P < 0.05) and 1.39 (95%CI: 1.23, 1.57, P < 0.001) relative to the none serving (0 serving/day) group.

Conclusion: SSBs intake was significantly associated with higher risk of MetS and abdominal obesity in Chinese children aged 7-18 years. SSBs intake control could be a target for preventing and treating MetS and abdominal obesity in children and adolescents.

Association Between Early Life Experience and Ideal Cardiovascular Health Factors in Chinese Children and Adolescents

Na Zhang^{*}, Hao Zheng, Shuyi Li and Yanna Zhu

Department of Maternal and Child Health, Sun Yat-sen University, China

Abstract

Background: “Ideal cardiovascular health (CVH)” was proposed by American Heart Association in 2010 and gradually became a new standard to measure CVH status. Few studies estimated the association between ideal CVH and early life experience in children and adolescents from low- to middle-income countries like China.

Methods: Data was derived from 4643 participants (7-17 years) in an obesity intervention study during 2013-14. Data on smoking, dietary intake and physical activity was obtained by questionnaire, weight, height and blood pressure were measured. Blood samples were collected to examine total cholesterol and fasting plasma glucose (FPG) level. Logistic regression was used to assess the associations between CVH metrics and early life factors.

Results: Significant associations were found between early life experience and ideal CVH metrics. Ideal BMI was positively correlated to vaginal delivery (vs cesarean OR = 1.390, 95% CI: 1.188-1.627), while negatively associated with high birth weight (vs normal birth weight, OR = 0.652, 95% CI: 0.493-0.863). Vaginal delivery and maternal bearing age < 20 years were significantly related to ideal physical activity (all p < 0.01). Moreover, ideal FPG level was associated with breastfeeding >12 months and maternal bearing age > 30 y (all p < 0.01). Importantly, comparing participants had 0-1 and 4-5 CVH metrics, we found participants with a younger gestational age (< 37w) were more likely to have 0-1 metrics (OR = 0.258, 95% CI: 0.110-0.607), while those born through vaginal delivery tended to have 4-5 metrics (OR = 1.818, 95% CI: 1.013-3.264).

Conclusion: CVH metrics were significantly associated with certain early life factors. Strategies aiming at specific early life experience might be appropriate for tackling cardiovascular risk.

Status of Fasting Glucose Level and Impaired Fasting Glucose Prevalence in Chinese Children and Adolescents-A National Cross-sectional Analysis

Jiayu He^{*} and Yanna Zhu

¹Department of Maternal and Child Health, School of Public Health, Sun Yat-sen University, China

Abstract

Aim: The present study was to investigate glucose metabolism including level of fasting glucose (FG) and the prevalence of impaired fasting glucose (IFG) and abnormal FG among Chinese children and adolescents, as well as to explore the influencing factors.

Methods: Based on a national intervention study against obesity conducted in seven main provinces of China in 2013-2014, 15736 children and adolescents aged 7-18 years at baseline were included in the present analysis. Information of demographics and socioeconomic status were collected by questionnaires and anthropometric parameters were measured. Logistic regression analysis was applied in statistical analysis.

Results: The mean FG and prevalence of IFG and abnormal FG were 4.67 mmol/L, 2.80% and 2.92% respectively, the trends of which were significantly varied with age increasing (all $p < 0.001$) and weight status (all $p < 0.001$). Compared with girls, boys were observed with higher values of mean FG, prevalence of IFG and abnormal FG (4.73 mmol/L vs 4.60 mmol/L, 3.84% vs 1.70%, 3.99% vs 1.78%, all $p < 0.001$). Higher FG level appeared double peaks at 9-11 years and 16-17 years separately whereas higher prevalence of IFG and abnormal FG appeared only one peak at 10-13 years. Developed economy and south area were risk factors for higher values of mean FG, prevalence of IFG and abnormal FG (all $P < 0.001$).

Conclusions: Among Chinese children and adolescents aged 7-18 years, prevalence of IFG and abnormal FG were higher than prior values, which means essential measures should be taken to prevent abnormal glucose metabolism in those population.

Association of Soy Food Consumption with Obesity and Hypertension in Southern Chinese Children and Adolescents

Tongtong He^{*}, Shuyi Li and Yanna Zhu

Department of Maternal and Child Health, School of Public Health, Sun Yat-sen University, China

Abstract

Background: The associations between soy food consumption and cardio-metabolic risk factors in children remains unclear due to limited evidence. We aim to explore the association of soy food consumption with the risk of obesity and hypertension in Chinese children and adolescents.

Methods: Total of 10,536 children and adolescents aged 7-18 years (5,125 boys and 5,411 girls) were enrolled from a cross-sectional study in Guangzhou City, South China. Information on demographic characteristics and dietary consumption were collected using self-reported questionnaires. Anthropometric characteristics were measured. Obesity, abdominal obesity and hypertension were defined by Chinese criteria for children and adolescents. Multiple logistic regression model was applied to estimate the association of soy food consumption with obesity and hypertension.

Results: About 39.5% of participants consumed soy food more than 3 times per week. The mean of liquid and solid soy food consumption was 0.35 ± 0.54 cups/day and 0.46 ± 0.63 servings/day, respectively. The adjusted odds ratio (OR) of hypertension in high liquid servings and high frequency were 0.79 (95% CI: 0.67, 0.94) and 0.83 (95% CI: 0.70, 0.97) compared with none consumption. And the adjusted OR of obesity in high solid servings and in high frequency were 1.34 (95% CI: 1.09, 1.63) and 1.30 (95% CI: 1.07, 1.58), respectively. However, no significant association was found between soy food consumption and abdominal obesity.

Conclusion: In Chinese children and adolescents, high soy food consumption was significantly associated with lower prevalence of hypertension, but higher prevalence of obesity.

Interactions Between Birth Weight and Feeding Pattern on Dyslipidemia and Hyperglycemia in Chinese Children and Adolescents

Jingmeng Ju^{*} and Yanna Zhu

Department of Maternal and Child Health, School of Public Health, Sun Yat-Sen University, China

Abstract

Background: Little is known about the interacting effect of birth weight and feeding pattern on children's dyslipidemia and hyperglycemia. The present study was aiming to examine this interaction in Chinese children and adolescents.

Methods: Data of 9,872 Chinese children and adolescents, aged 7-18 years were obtained and analyzed based on an intervention study against obesity, which was conducted in seven provinces of China in 2013. Information on birth weight and feeding pattern was collected by questionnaire. Biochemical indicators including fasting serum glucose (FSG), triglyceride (TG), total cholesterol (TC), high density lipoprotein-cholesterol (HDL-C) and low-density lipoprotein-cholesterol (LDL-C) were tested. Multivariate logistic regression model was applied to examine the health effects.

Results: Among non-breast-feeding group, infants born large-for-gestational-age (LGA) had higher risk of hyperglycemia (Interaction $P = 0.02$) compared with infants born appropriate-for-gestational-age (AGA). In infants born LGA, non-breast-feeding attributed to higher level of plasma TC compared with breast feeding (OR 1.15, 95% CI: 1.01-2.27). No interacting effect of birth weight and feeding patterns on triglyceride, HDL-C and LDL-C were found.

Conclusions: There were interacting effects of LGA and feeding pattern on hyperglycemia and TC in Chinese children and adolescents.

Estradiol Mitigates Leptin Resistance and Enhances Leptin Responses in Males Rats

Isabelle Côté, Sara M. Green, Drake Morgan, Christy S. Carter, Nihal Tümer^{*} and Philip J. Scarpace^{*}

University of Florida, FL, USA

Abstract

We recently reported that male compared with female rats are less responsive to long-term central leptin overexpression, as assessed by decreased food intake and delta body weight. Moreover, males were more susceptible to development of leptin resistance than females suggesting that either male hormones mitigate, or female hormones exacerbate leptin responses or both. To address the potential role of estradiol, we centrally delivered a viral vector to overexpress either leptin or green fluorescence protein (GFP) into male rats that were simultaneously treated with either estradiol (25 µg/kg; S.C., daily) or vehicle in a two x two design. We examined chronic changes in food intake (FI), body weight (BW) and body composition over 26 days. BWs in both Leptin-vehicle and GFP-Estradiol were reduced compared with GFP-vehicle and more sustained in Leptin-Estradiol reminiscent of the pattern in females. Changes in FI were unique to each treatment, with a rapid decrease in Leptin-vehicle followed by gradual renormalization typical of leptin-induced leptin resistance in male rats. In contrast, the GFP-Estradiol decrease in FI was of lower amplitude ($P < 0.001$) but sustained over the 26 days ($P < 0.003$). The Leptin-Estradiol group was mostly additive with a delay in leptin resistance typical of the pattern observed in female rats. Decreased body fat by TD-NMR was unique to each treatment paralleling FI. Phosphorylation of STAT3 (P-STAT3) was examined at death. No exogenous leptin was administered, thus detected P-STAT3 was due to central overexpressed leptin. P-STAT3 was greater in both leptin groups compared with GFP, but there was no difference between Leptin-vehicle and Leptin-Estradiol. In conclusion, these data suggest that leptin and estradiol both decrease FI and BW through different mechanisms, with the pattern of Leptin-Estradiol reminiscent of that observed in females. Furthermore, the estradiol-induced decrease in FI & BW does not involve P-STAT3. These data suggest that estradiol may be one factor in the increased leptin response and mitigated leptin resistance observed in female rats.

The Relationship Between Sleep Disorders and Erectile Dysfunction in the Middle-Aged and Older Men

Wei-Sheng Chung^{1,2} and Mitchell Wu^{3*}

¹*Department of Internal Medicine, Taichung Hospital, Ministry of Health and Welfare, Taichung, Taiwan*

²Department of Health Services Administration, China Medical University, Taichung, Taiwan

³International School of Capital Medical University, Beijing, China

Abstract

Background: Studies evaluating the relationship between sleep disorders (SD) and erectile dysfunction (ED) are scant. We investigated if the middle-aged and older men with SD are associated with risk of ED.

Methods: We conducted a population-based longitudinal cohort study to evaluate the incidence and risk of ED in men \geq 50 years newly diagnosed with SD between 2002 and 2008 from the Longitudinal Health Insurance Database (LHID). Four non-SD controls for each SD men were randomly selected from the LHID and frequency matched according to age and sex. The follow-up period began from the index date until the date of an ED diagnosis, loss to follow-up, or December 31, 2010. Cox proportional hazard models were used to estimate the effects of SD on the risk of ED presenting with hazard ratios (HRs) and 95% confidence interval (CI).

Results: A total of 15,866 men with SD and 63,464 men without SD were enrolled. The mean age of the study participants were 63.2 ± 9.0 years. The men with SD showed a significantly higher prevalence of comorbidity than did the non-SD men. The SD cohort exhibited a greater overall incidence of ED than did the non-SD cohort (25.00 vs 12.33 per 10,000 person-y). After we controlled for potential covariates, the SD patients still had a 1.90-fold adjusted HR of developing ED compared with the non-SD controls (95% CI = 1.65-2.20). Men with SD carried an increased incidence and risk of ED development compared with men without SD regardless of age and comorbidity.

Conclusion: This retrospective population-based cohort study demonstrated that ED risk obviously increased in the SD cohort compared with the non-SD cohort.

Risk of Stroke in the Middle-Aged and Older Patients with Osteoarthritis

Wei-Sheng Chung^{1,2} and Mitchell Wu^{3*}

¹Department of Internal Medicine, Taichung Hospital, Ministry of Health and Welfare, Taichung, Taiwan

²Department of Health Services Administration, China Medical University, Taichung, Taiwan

³International School of Capital Medical University, Beijing, China

Abstract

Objectives: Osteoarthritis (OA) is related to carotid atherosclerosis. Studies evaluating the incidence and risk of stroke in middle-aged and older patients with OA are limited. Therefore, we conducted a population-based cohort study to investigate the relationship between stroke and OA in the middle-aged and older people.

Methods: Using Taiwan's Longitudinal Health Insurance Database 2000 (LHID 2000), we enrolled aged 50-90 years who were newly diagnosed with OA between 2002 and 2003 as the OA cohort. One control without OA was frequency-matched to each OA patient in LHID 2000 based on sex, age, and index year. The follow-up period ran from the index date of OA until the diagnosis of stroke, withdrawal from the NHI program, death, or the end of 2010. We used Cox models to measure the crude and adjusted hazard ratios (HR) of stroke, with 95% confidence intervals (CI).

Results: A total of 33,236 OA patients and 33,236 non-OA patients, and their mean age was 66.1 ± 9.5 years. The OA patients exhibited a significantly higher prevalence of comorbidities including hypertension, diabetes, hyperlipidemia, coronary artery disease, obesity, and congestive heart failure than did the non-OA patients. The OA patients showed a significantly increased incidence rate of stroke development compared with that in the non-OA patients irrespective of sex and comorbidity. After we controlled for sex and comorbidity, a 1.24-fold adjusted HR of developing stroke was present in the OA patients compared with that in the non-OA patients (95% CI = 1.20-1.28).

Conclusion: The middle-aged and older people with OA were at an increased risk of developing stroke compared with the counterparts without OA.

Inflammatory Markers in Relation to Pre-Pubertal Obesity

Darina Dinov¹ and Albert Khait^{2*}

¹Western University of Health Sciences of the Pacific, CA, USA

²Loma Linda Medical School, CA, USA

Abstract

Background: Childhood obesity is a major epidemic with adipokines-TNF- α , IL-6, leptin, and adiponectin-being potentially implicated in the pathogenesis.

Methods: We conducted a literature search of PubMed where we searched key terms: 'prepubescent obese children' with 'TNF- α ' or 'IL-6' or 'hs-CRP' or 'adiponectin' for clinical trials.

Research: Thirty-six articles remained after our exclusion criteria was applied. Most of these showed a positive correlation of obesity with TNF- α , IL-6, and hs-CRP; along with a negative correlation with adiponectin. There was one study that we found that showed TNF- α to not be related to obesity and another that showed adiponectin to have a positive correlation with obesity. However, overall the overwhelming research showed what we predicted. Another contributing study that we evaluated showed that TNF- α causes a decrease in C/EBP alpha which are gene promoters that downregulate myc. By downregulating this cell cycle regulator there is potential for proliferation of cells leading to increased risk for both obesity and cancer. TNF- α , is one of the primary inflammatory markers that has been implicated in obesity; thus, showing that it could have diagnostic factors in cancer through this downregulation of myc.

Conclusion: A possible consideration for future research is to evaluate the possible relationship between inflammatory markers discussed as predictive factors and diagnostic factors for pediatric cancer. With these potential innovative methods to help diagnose pediatric cancer we, as a research community, can save many lives and lessen the burden cancer has put upon our society.

Association Between Sedentary Behavior and Obesity in Korean Adolescents

Minhee Kim, Jaesung Park and Kyungsoo Kim*

Department of Family Medicine, The Catholic University of Korea, South Korea

Abstract

According to convenient traffic and the development of information Technology, the pattern of entire life has changed. Life style is closely related with recent increase of obese people by influenced the time of dynamic activity decreased due to increasing sedentary time. There is a lack of adolescent study related with sedentary time in domestic so that the goal of this study is to investigate the relation of sedentary life and obesity of adolescents using the date of the online survey on adolescent health behaviors in 2016. Hence, this study is about the relation of general characteristics, healthy behavior, sedentary time for study, sedentary time for leisure according the primitive date of the online survey on adolescent health behaviors. The risk of the obesity was decreased by sedentary time for study on weekend. Otherwise, the risk of the obesity was increased by rather the group of sedentary time over median value than the group of one below median value in sedentary time on weekend and weekdays. The reason is that sedentary time such as watching TV relatively shows the lower energy consumption. Also, it is accompanied by unhealthy behaviors such as snakes, the hyper-ingestion of high calories beverages and so on.

Relationship Between Obesity and an Autoantibody Directed Against Apolipoprotein B-100

Moon Kyung Choe¹, Nan-Hee Kim², Bert Binas¹ and Hyo Joon Kim^{1,3}

¹Hanyang University-ERICA, South Korea

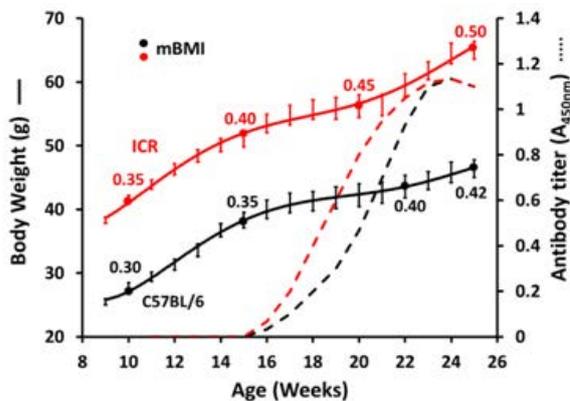
²Korea University-Ansan Hospital, South Korea

³SJBiomed Inc. Ltd, South Korea

Abstract

Here we report the characteristics of an autoantibody (AAB) against Apolipoprotein B-100 (ApoB-100) that we detected in the serum of 60% caloric high fat diet (HFD)-fed mice after they became severely obese. We determined the induction profile, relationship with the body mass index (BMI), isotype, and antigen specificity. The AAB was detected starting from a body weight of 35~37 grams in C57BL/6 (inbred) and 50~52 grams in ICR (outbred) mice. This translates into a murine BMI [mBMI = g/cm²] of 0.35 and 0.40 (see Figure). The comparison of Chow-fed and HFD-fed C57BL/6 mice showed that AAB induction was significantly correlated with the mBMI (Spearman rho (ρ) = 0.409; p = 0.001 (n = 64)). We affinity-purified the murine AAB using human ApoB-100 and determined the isotype as IgG1 with κ -light chains. The AAB epitope was screened by dot-blot analysis with known ApoB-100 epitope peptides (p45, p210, p240) and B4T, an artificial anti-obesity

immuno-therapeutic antigen previously reported by us. Of these, p210 (which has been known as a putative LDL receptor binding domain) and B4T were strongly recognized by the AAB. These results are in line with our published concept that ApoB-100 is a suitable target for obesity treatment and suggest the novel concept that an obesity-induced AAB directed against ApoB-100 may counteract obesity.



Reciprocal Regulation Between Obesity and Diabetes

Eun Mi Go¹, Yena Hong², Hyeon Jeong Kwon², Jin Hyeong Park² and Na Kyung Lee^{1,2*}

¹Department of Medical Science, College of Medical Sciences, Soonchunhyang University, Asan, Chungnam, South Korea

²Department of Biomedical Laboratory Science, College of Medical Sciences, Soonchunhyang University, Asan, Chungnam, South Korea

Abstract

To investigate reciprocal regulation between obesity and diabetes, three different assays were used. The injection of streptozotocin in mice decreased serum insulin level and increased blood glucose level. After 8 days of injection, STZ-treated mice have shown significantly less weight than control mice. Gold thioglucose (GTG) injection induced hyperphagia in mice and GTG-treated mice were obese when analyzed 3 months after injection. Their blood glucose levels were also significantly increased. Finally, we fed mice a high fat diet (HFD) for 6 weeks. Mice fed a HFD gained significantly high weight than control mice and developed glucose intolerance. These results show the reciprocal regulation between obesity and diabetes.

The Effect of a Combined Program of Dietary Restriction and Physical Activity on the Physical Function and Body Composition of Obese Older Adults with Knee Osteoarthritis

Asma Alrushud^{1,2*}, Alison Rushton^{1,3}, Gurjit Bhogal⁴, Fraser Pressdee⁴ and Carolyn Greig^{1,3}

¹School of Sport, Exercise and Rehabilitation Sciences, University of Birmingham, Birmingham, UK

²College of Applied Medical Sciences, King Saud University, Riyadh, Saudi Arabia

³MRC-Arthritis Research UK Centre for Musculoskeletal Ageing and Health, University of Birmingham, Birmingham, UK

⁴The Royal Orthopaedic Hospital NHS Foundation Trust, Birmingham, UK

Abstract

Knee Osteoarthritis (OA) is the most common cause of disability, affecting approximately 3.64% of the global population. Interventions including intensive weight loss and exercise have shown a significant effect on pain reduction in older adults with symptomatic knee OA. We aim to assess the feasibility and acceptability of a combined dietary restriction and physical activity intervention program and collect preliminary data.

This single-arm intervention study will run from December 2017 to June 2018 at one site in the UK. Thirty obese participants will receive a knee OA physiotherapy usual care program for 4 weeks and then continue to exercise in their local gym/ leisure facility for a further 12 weeks. Participants will also follow dietary restriction aiming for a decrease of 300-500 kcal.day⁻¹ or 500-1000 kcal.day⁻¹ as appropriate to initial BMI. The outcome measures are focus group and questionnaire to assess feasibility. Also, physical function (WOMAC) scale, body weight, waist circumference and BMI, musculoskeletal function; knee ROM, lower limb power, physical performance; stair climb; timed up-and-go, pain intensity using WOMAC pain subscale, quality of life

(SF-36) will be assessed at baseline, 4 and 16 weeks. Body composition and markers of joint remodeling will be measured only at baseline and 16 weeks. Mixed analysis techniques will be used to analyze the quantitative and qualitative outcome measures.

The results of this study will inform a refined intervention and a future adequately powered low risk of bias definitive trial. This trial is registered with the ISRCTN registry (ISRCTN 12906938).

Development of a Semi-quantitative Food Frequency Questionnaire to Measure Intakes of Macro Micro Nutrients for Saudi Population in the Western Region of Saudi Arabia

Norah Aljohani¹ and David K. Y. Lei

Taibah University, Saudi Arabia

Abstract

The Food Frequency Questionnaire (FFQ) is one of the most extensively used tools in epidemiologic studies to assess dietary consumption among diverse populations. The present study aimed to describe the development of a culture Specific Food Frequency Questionnaire (SFFQ) for Saudi Arabian population in the western region in Saudi Arabia. A nationally representative food list has been tested and combined to the food list obtained from 24-hour recalls collected from 250 healthy participants, between 18-75 years old, by using a stratified clustered sample design. The food list for the new SFFQ was selected by stepwise multiple regression. Twenty-five separate models were created for each nutrient intake, which included energy, macronutrients and micronutrients. One hundred and fifty-eight (158) foods explained 90% of the between person variance for total energy intake, macronutrients and micronutrients. Finally, these 158 food items were selected for the new SFFQ. The food list was converted to a new SFFQ form based on the pattern of Harvard FFQ. A new SFFQ for Saudi Arabian population in the western region has been developed to measure diet and food habits.

Liver Global Gene Expression Analysis After 8 Week Feeding Soy Isolate- or Casein-Based Diets Using Male Obese Zucker Rat Model

Melisa Kozaczek¹, Walter Bottje¹, Elizabeth Greene¹, Kentu Lassiter¹, Byungwhi Caleb Kong¹, Sami Dridi¹ and Reza Hakkak²⁻⁴

¹University of Arkansas, Department of Poultry Science, Fayetteville, AR, USA

²Departments of Dietetics and Nutrition, University of Arkansas for Medical Sciences, Little Rock, AR, USA

³Department of Pediatrics, University of Arkansas for Medical Sciences, Little Rock, AR, USA

⁴Arkansas Children's Research Institute, Little Rock, AR, USA

Abstract

Feeding soy protein isolate (SPI) reduced liver steatosis in male obese Zucker rats compared to those fed a casein (CAS)-based diet (Hakkak et al. 2015. *J. Medicinal Food* 18:1274). To gain insight into fundamental mechanisms, we have conducted a global gene expression (RNAseq) analysis on liver samples obtained from male rats fed either the SPI or CAS-based diets (n = 8 per group) for 8 weeks. The RNAseq data was analyzed using Ingenuity Pathway Analysis (IPA) software (Qiagen) using a P < 0.05 and 1.3 fold differential expression cutoff values. To validate the results from the RNAseq, targeted mRNA analysis was conducted using PCR. Eleven genes were selected that were shown to be some of the most differentially expressed between the two groups. Of these, 10 out of 11 had PCR values that concurred with up-regulation or down-regulation in the RNAseq dataset. In the upstream analysis function, IPA makes predictions of activation or inhibition (activation z-score) of molecules that is based on expression of genes in the data set and literature citations showing similar or dissimilar relationships between the target molecule and downstream target. In the comparison of the two diet groups, there were 25 genes that were predicted to be activated in the liver of SPI-fed rats and 43 genes that were predicted to be inhibited in comparison to the CAS-fed rats. We believe these findings may shed light on understanding mechanisms that soy protein isolate is able to reduce liver steatosis in this obese Zucker rat model.

A Very Low Calorie Ketogenic Diet Improves Weight Loss and Quality of Life in Patients with Adjustable Gastric Banding

Daniele Fumelli, Marina Taus, Debora Busni, Francesca Borroni, Sonia Sebastianelli, Giulia Nicolai, Marina Paesani* and Albano Nicolai

Department of Clinical Nutrition and Dietetics, Azienda Ospedali Riuniti Ancona, Italy

Abstract

Diet and physical activity are not enough to achieve a healthy BMI in severe obesity. Laparoscopic adjustable gastric banding (LAGB), has encouraging results in terms of weight loss and resolution of obesity-related comorbidities. However, several months after LAGB, some patients are unable to lose weight anymore and don't tolerate a further calibration because of its collateral effects.

Aim: The aim of this study is to identify the potential role of high protein-low carbohydrate ketogenic diet (KD) in managing weight loss in patients who underwent gastric banding and didn't lose weight anymore.

Methods: 50 patients underwent LAGB between January 2010 and December 2013. In twenty patients (GROUP A) we observed a stop in weight loss so we divided this patients into two groups. One group (group A1: 10 patients) continued to follow a LCD low calorie diet and underwent a further calibration; the other group (group A2: 10 patients) started to follow a KD for the next 8 weeks.

Results: Both group resumed a significant weight loss, however group A1 patients reported collateral effects due to calibration and a higher Impact of Weight on Quality of Life-Lite (IWQOL-Lite) that correlates with a lower quality of life than patients following KD.

Conclusions: KD can improve the weight loss and quality of life in patients who underwent LAGB and failed at losing more weight allowing a weight loss comparable to that obtained with a further calibration and it is useful to avoid drastic calibrations and their collateral effects.

Body Fat Distribution, Epicardial Fat in Relationship to Coronary Artery Disease

Dana Prídavková¹, Katarína Martiaková¹, František Kovář¹, Jakub Prídavka², Marián Mokán¹

¹Clinic of Internal Medicine I., Jessenius Faculty of Medicine in Martin of the Comenius University of Bratislava, Slovakia

²Jessenius Faculty of Medicine in Martin of the Comenius University of Bratislava, Slovakia

Abstract

Background: To assess the relationship between visceral fat, epicardial fat, other obesity parameters and coronary artery disease (CAD).

Methods: There were 80 patients examined (43 males, 37 postmenopausal females) undergoing elective coronary angiography. We examined body mass index (BMI), visceral fat (VF), total body fat (TBF) using bio impedance, waist circumference (WC), neck circumference (NC) and thickness of tricipital, bicipital, subscapular and suprailiacal skinfolds. We assessed the echocardiographically measured epicardial fat (EF) thickness. We accounted for lipidogram, glycaemia, insulin resistance index (HOMA-IR), atherogenic index of plasma (AIP). The set was divided into group with coronagraphically proved stenosis or stenoses (with CS), and a group without finding of quantifiable stenosis or stenosis (without CS).

Results: The differences in the thickness of EF in mentioned groups were 6.5 vs 5.2 mm in males ($p < 0.025$) and 6.1 vs 6.0 mm in females ($p < 0.025$). BMI was not a dominant parameter of adiposity. In males in with CS group, there was a dominant EF and TBF, and in females in with CS group, the fat deposits were increased in overall. Males and females with coronary stenosis had higher scapula-tricipital index ($p < 0.05$). The patients in with CS group had increased HOMA-IR ($p < 0.005$) and AIP ($p < 0.025$).

Conclusion: EF thickness in males and VF mass in females could be considered obesity parameters in assessment of pre-clinical stages of coronary atherosclerosis and prediction of risk of CAD.

Adipose Tissue Distribution in Relationship to Coronary Artery Disease – Is Epicardial Fat an Important Parameter?

Dana Prídavková*, Katarína Martiaková, Renáta Lišková, František Kovář, Marián Mokáň and Jakub Prídavka

Jessenius Faculty of Medicine in Martin of the Comenius University in Bratislava, Slovakia

Abstract

Aim: To assess the relationship of epicardial fat (EF) and other body fat distribution, glucose and lipid parameters with coronary stenosis.

Methods: We examined 80 patients (43 men, 37 postmenopausal women) undergoing elective coronary angiography. We assessed the thickness of EF by echocardiography (Philips iE33), visceral fat (VF) and total body fat by multifrequency bio impedance (InBodyS10). We measured the scapulothoracic index (STI) by Harpenden caliper, we assessed waist, neck circumference, examined glucolipid biochemical parameters. The set was divided into group with coronagraphically proved stenosis or stenosis (CS+), and a group without finding of quantifiable stenosis or stenosis (CS-).

Results: CS+ men had epicardial fat 24% thicker than CS- men (6.5 vs. 5.2 mm, $p < 0.025$), in women, this difference was insignificant (6.1 vs. 6.0 mm, $p < 0.025$). VF was higher in CS+, rather than CS- women, (128.5 vs. 117.0 cm², $p < 0.005$) with no significant difference in CS+ and CS- men (99.6 vs. 99.3 cm², $p < 0.005$). 58.8% of CS+ women and 23.1% of CS+ men had diabetes mellitus. CS+ group had higher HOMA-IR; insulin resistance index (4.8 vs. 1.6, $p < 0.005$) and atherogenic index of plasma (AIP) than CS- group (0.22 vs. 0.17, $p < 0.025$).

Conclusion: In CS+ men, but not in CS+ women, epicardial fat appeared as a risk parameter for the presence of coronary artery disease. In CS+ women, risk factor appears to be increased visceral fat and diabetes mellitus.

Jervine Inhibits Adipogenesis in 3T3-L1 Adipocytes and Increases Thermogenesis in Primary Cultured Brown Adipocytes

Seona Lim*, Jinbong Park, Yunu Jung, Dong-Hyun Youn, JongWook Kang, Gahee Song and Jae-Young Um

Department of Pharmacology and Basic Research Laboratory for Comorbidity Regulation, College of Korean Medicine, Kyung Hee University, Seoul, South Korea

Abstract

Introduction: Obesity has become a public health dilemma recently, especially in developed countries. However, current medications for obesity are limited because of their adverse effects. Thus, interest in natural products for the treatment of obesity is rapidly growing. Herein, we investigated the anti-obesity effect of jervine, a component of *Veratrum nigrum* using 3T3-L1 adipocytes and primary cultured brown adipocytes.

Methods: The cellular lipid content in 3T3-L1 adipocytes was assessed by Oil Red O staining. mRNA expression of adipogenic genes and thermogenic genes were determined by real-time RT-PCR in 3T3-L1 adipocytes and in primary cultured brown adipocytes, respectively. Western blot assay was used to evaluate the protein expression of uncoupling protein 1 (UCP1) and peroxisome proliferator-activated receptor gamma coactivator 1-alpha (PGC1 α).

Results: Lipid contents were decreased by jervine treatment in 3T3-L1 adipocytes. The expressions of Pparg and Cebpa were also significantly decreased in jervine-treated 3T3-L1 cells. On the other hand, jervine increased mRNA expression of thermogenic genes, Ucp1 and Pgc1a in primary cultured brown adipocytes. Consistently, UCP1 and PGC1 α were increased as well when determined by western blotting assays. These results indicate that jervine has a potent anti-adipogenic effect in 3T3-L1 cells which we assume was due to the induction of thermogenesis in brown adipocytes.

Conclusion: With the continuing spread of obesity prevention as a fundamental medicine strategy, both clinicians and researchers should take a closer look at herbal medicine. Our results indicate that jervine, a nature-derived substance, may be beneficial in the treatment of obesity.

Artesunate Increases AMPK Phosphorylation and Mitochondrial Activation in Primary Cultured Brown Adipocytes

JongWook Kang*, Jinbong Park, Yunu Jung, Dong-Hyun Youn, Seona Lim, Gahee Song and Jae-Young Um

Department of Pharmacology and Basic Research Laboratory for Comorbidity Regulation, College of Korean Medicine, Kyung Hee University, Seoul, South Korea

Abstract

Introduction: Obesity is a metabolic disorder characterized by chronic inflammation and dyslipidemia, and also is a strong predictor for development of hypertension, diabetes mellitus, and cardiovascular diseases. Artesunate, an active compound from *Artemisia annua*, is a medication used for malaria treatment. This study was conducted to examine the effect of artesunate on energy expenditure and mitochondrial activation in primary cultured brown adipocytes.

Methods: Mitochondria contents were measured by a Mito-tracker kit. Expressions of AMP-activated protein kinase (AMPK) and peroxisome proliferator-activated receptor gamma coactivator 1-alpha (PGC-1 α) were determined by a western blot assay. mRNA expression of peroxisomal membrane protein (PMP) 70 gene are measured by a real-time RT-PCR analysis.

Results: Artesunate increased protein levels of phosphorylated AMPK and PGC-1 α in primary brown adipocytes. Further gene analysis showed that artesunate also increased the levels of PMP70 in primary brown adipocytes. Consistently, we confirmed that artesunate increased mitochondria contents in primary brown adipocytes.

Conclusion: Our results suggest that artesunate, a nature-derived agent, may possess an anti-obese feature by increasing AMPK phosphorylation activation mitochondrial activation.

Paeonol Ameliorates Obesity by Activating Uncoupled Protein 1 in High-Fat Diet-Induced Obese Mice and Primary Cultured Brown Adipocytes

Gahee Song*, Jinbong Park, Yunu Jung, Dong-Hyun Youn, JongWook Kang, Seona Lim and Jae-Young Um

Department of Pharmacology and Basic Research Laboratory for Comorbidity Regulation, College of Korean Medicine, Kyung Hee University, Seoul, South Korea

Abstract

Introduction: Obesity has risen as a critical health threat worldwide. We investigated the anti-obesity effect of paeonol, a substance of *Paeonia lactiflora* by assessing changes of the adipogenesis-related factors in high-fat diet (HFD)-induced obese C57BL/6 mice and Primary Cultured brown adipocyte.

Methods: We induced obesity in C57BL/6 mice by high-fat diet (HFD) administration for 12 weeks. The body weight and fat tissue weight were measured, and core body temperature after cold stimulation were assessed. Expressions of Ucp1 and Cidea in primary cultured brown adipocytes were determined by real-time RT-PCR.

Results: Paeonol reduced body weight, size and mass of adipose tissues. Paeonol-fed mice also retained core body temperature after 20 min-cold stimulation compared to vehicle-fed mice. mRNA expressions of Ucp1 and Cidea were up-regulated by paeonol treatment in primary cultured brown adipocytes. These results demonstrate that paeonol has a potent anti-obesity effect, which we assume was due to the induction of thermogenesis in brown adipose tissue (BAT).

Conclusion: Due to the limits of currently available drugs, the necessity for new drugs for the treatment of obesity is rapidly growing. Our results suggest that paeonol, a nature-derived agent from *Paeonia lactiflora*, shows anti-obesity features by activating thermogenesis in BAT. Therefore, paeonol shows a potential as a new thermogenic agent for treatment of obesity.

Association Between Osteoporotic Vertebral Fracture and Body Mass Index

Hyun Tae Kim* and Hyoung Yeon Seo

Department of Orthopedic Surgery, Chonnam National University Hospital, Gwangju, South Korea

Abstract

Objectives: Whether osteoporotic vertebral fracture is associated with obesity is under debate. Therefore, this study aims

to determine the relationship between osteoporotic vertebral fracture and body mass index (BMI) by comparing it with other types of osteoporotic fractures.

Summary of Literature Review: Several authors have reported the factors that predict the risk of osteoporotic vertebral fracture in individuals with obesity, but the objective risk factors are still controversial.

Materials and Methods: A retrospective study was conducted on postmenopausal women, including 100 people with osteoporotic vertebral fractures, 104 with femur neck fractures, 107 with distal radius fractures, and 103 with osteoporosis or osteopenia but without fractures. The BMI was calculated and bone mineral density (BMD) test was administered within 3 days after injury. For each type of fracture, the relationships with age, height, weight, BMI, and BMD were investigated. The relationship with the number of osteoporotic vertebral fractures according to BMI was also evaluated.

Results: In comparing osteoporotic vertebral fractures and osteoporotic non-vertebral fractures, there were no significant differences in the relationship with age, height, or BMD ($p > 0.05$). Osteoporotic vertebral fractures showed a statistically higher average weight and BMI, compared to other osteoporotic non-vertebral fracture groups ($p < 0.05$). Among those with osteoporotic vertebral fractures, the number of fractures did not show a significant relationship with BMI ($p = 0.177$).

Conclusions: In osteoporotic vertebral fracture patients, compared to groups with other types of osteoporotic fractures, average weight and BMI were higher.

The Pathogenesis of Interleukin-22 and Its Receptor in UVB-Induced Skin Inflammation

Yejin Kim* and Jae Seung Kang

Seoul National University College of Medicine, South Korea

Abstract

IL-22 plays a pathogenic role in acute and chronic skin diseases. In addition, UVB, which affects the skin, is linked to various diseases, including obesity. Unlike IL-22 produced in immune cells, the expression IL-22R α , a functional subunit of IL-22R, is mostly restricted to non-hematopoietic cells in organs like skin and pancreas. Although it is well known that UVB induces skin inflammation, there have been no reports regarding the role of UVB in regulating the expression of IL-22R α receptor so far. IL-22R α is increased in HaCaT and primary human keratinocytes after UVB irradiation through the translocation of IL-22R α from the cytosol to the membrane. We also found that increase in the expression of IL-22R α is mediated by the activation of the PI3K/Akt pathway. Moreover, the suppressed proliferation of keratinocytes caused by UVB irradiation can be recovered with an IL-22 treatment. The increased expression of IL-22R α is closely related with the proliferation of keratinocytes and the production of inflammatory cytokines (IL-1 α , -6 and -18), during UVB-induced skin inflammation. It suggests that UVB facilitates skin inflammation by increasing the expression of IL-22R α in keratinocytes. Therefore, our study provides a new insight into UVB-induced skin inflammation and the regulation of related diseases.

Utilizing an Assessment of Eating Pattern with a Shared Decision-Making Approach to Target Obesity and Hypertension by Improving Dietary Choices

Zeus C. Castro*, Zerremi Caga-anan, Humberto G. Mendoza, Masood A. Shariff, Maria Espejo, Balavenkatesh Kanna, Shama Lalani, Leandro R. Ramirez and Cristabel Robles

New York City Health + Hospitals in Affiliation with Weill Cornell Medical College, NY, USA

Abstract

Introduction: The aim of our non-blinded study is to evaluate the outcome of Shared Decision-Making (SDM) versus Usual Decision-Making (UDM) in these two minority populations in the Bronx. This study provides support to the value of using SDM techniques as an effective method for behavioral change that Physicians can incorporate into their practice. Our novel research approach applies the SDM method to Latin and AA populations. This Phase II trial allowed us to identify and confirm domains where these two populations can effectively modify their behaviors to improve their BMI, blood pressure and reduce their risk for cardiovascular disease.

Methods: A prospective randomized non-blinded pilot study was conducted using validated questionnaires that collected quantitative data. The Eating Pattern Questionnaire was chosen to evaluate Diet Quality and Frequency, Snack Intervals, and Fluid Intake. Meal frequency was determined by asking the patient which meals and snacks they consumed each day. Patients were randomly assigned into the UDM or SDM groups. Patients then received previously validated treatment recommendations

for the management of their obesity and hypertension given according to their assigned management protocol. The survey was completed during the initial encounter with follow-up at 3 and 6 months.

Results: A total of 67 patients were enrolled (AA: 32 Latinx: 35). At the initial assessment there was an insignificant difference in the number of meals/person between the UDM vs the SDM group (3.23 v 2.96, p 0.21). Unexpectedly, the number of meals in both groups dropped at the 3 mo. follow-up (2.89 v 2.67, p 0.45). However, at the 6 months follow up the frequency for both groups increased but not to the same levels at enrollment (3.17 v 2.9, p 0.44).

Conclusion: There was no significant difference seen between the UDM and SDM groups during this study. Our method to encourage improved dietary habits and increase the frequency of meals needs to be changed. Recent Shared Decision-Making studies have shown clinically significant improvement when using methods which encourage patient engagement, which incidentally, also increases patient accountability.

Structural Equation Model of Eating Habits, Smartphone Application Use and Therapeutic Lifestyle Change among Mentally Disabled Persons

Kyunghee Lee

Keimyung University College of Nursing, South Korea

Abstract

One of the most critical factors for the survival of a mentally disabled person is cardiovascular disease, and it is a secondary physical disease that results from obesity or being overweight. Obesity is a cause of various physical diseases. In particular, it reduces the average lifespan of mentally disabled people and hampers the overall quality of life. One out of three adults in South Korea is obese, and mentally disabled people account for 48.4% of the entire disabled population suffering from obesity, and the rate of increase is the highest.

Schizophrenia Patients tend to obtain satisfaction by eating extra foods and their dietary habits cause weight gain and metabolic disorder. We aimed to construct and test the structural equation model that analyzed the eating habits, smartphone application use and TLC among people with the mental disability. A survey using a structural self-questionnaire was conducted from 499 male and 341 female subjects. The data was analyzed by SPSS 23.0 and AMOS 21.0. The model fit for the modified hypothetical model was shown: $Q(\chi^2/df) = 2.727$, GFI = 0.977, NFI = 0.965, RMSEA = 0.045. In hypothetical model, the dietary habits affect the willingness to use smartphone applications and living styles directly. The dietary habits had also a mediate effect on living style through the willingness to use smartphone application. Therefore, it is necessary to adopt the dietary control using the smartphone application for TLC, which is available to prevent the metabolic syndrome among the mentally disabled persons.

Adaptations to Resistance Training are Mitigated in Sarcopenic Obese Elderly Women

Alessandro de Oliveira Silva^{1,2*}, Silvana Schwerz Funghetto⁴, Paulo Henrique Fernandes dos Santos⁴, Brad J. Schoenfeld⁵ and Jonato Prestes³

¹University Center of Brasilia (UniCEUB), Brasilia, Brazil

²Integrated Colleges of the Central Plateau Educational Union (FACIPLAC), Brasilia, Brazil

³Catholic University of Brasilia (UCB), Brasilia, Brazil

⁴University of Brasilia (UnB), Brasilia, Brazil

⁵Department of Health Sciences, CUNY Lehman College, Bronx, NY, USA

Abstract

Objectives: The purpose of this study was to compare the effects of resistance training (RT) on body composition, muscle strength and functional capacity in elderly women with and without sarcopenic obesity (SO).

Methods: A total of 49 women (aged ≥ 60) were divided in two groups: without SO (non-SO, n = 41) and with SO (OS, n = 8). Both groups performed a periodized RT program consisting of two weekly sessions for 16 weeks. All measures were assessed at baseline and post intervention, including anthropometry and body composition (dual-energy X-ray absorptiometry), muscle strength (one-repetition maximum 1 RM) for chest press and 45° leg press, and functional capacity [chair stand up, elbow flexion, timed "up & go" (TUG)].

Results: After the intervention, only the non-SO group presented significant reductions in % body fat (-2.2%; p = 0.006), waist circumference (-2.7%; p = 0.01), waist-to-hip ratio (-2:3; p = 0.02), and neck circumference (-1.8%; p = 0.03) as compared

with baseline. Muscle strength in the chest press and biceps curl increased in non-SO only (12.9 and 11.3%, respectively), while 450 leg press strength increased in non-SO (50.3%) and SO (40.5%) as compared with baseline. Performance in the chair stand up and TUG improved in non-SO only (21.4% and -8.4%, respectively), while elbow flexion performance increased in non-SO (23.8%) and SO (21.4%). Effect sizes for motor tests were of higher magnitude in the non-SO group, and in general, considered “moderate” compared to “trivial” in the SO group.

Conclusion: Results suggest that adaptations induced by 16 weeks of RT are attenuated in elderly woman with SO, compromising improvements in adiposity indexes and gains in muscle strength and functional capacity.

Elderly Women with Sarcopenia and Sarcopenic Obesity have the Same Levels of Inflammatory Parameters

Silvana Schwerz Funghetto¹, Alessandro de Oliveira Silva², Marina Morato Stival¹, Luciano Ramos de Lima¹, Izabel Cristina Rodrigues¹, Cris Renata Grou Volpe¹, Walterlânia Silva Santos¹, Fernanda Thais Ferreira de Paiva¹ and Tania Cristina M. S. B. Rehem¹

¹University of Brasilia (UnB), Brasilia, Federal District, Brazil

²University Center of Brasilia (UNICEUB), Brasilia, Federal District, Brazil

Abstract

The loss of muscle mass is usually accompanied by a concomitant increase in fat mass. The combination of increased fat mass and decreased muscle mass and strength in the elderly has been termed sarcopenic obesity (OS). Augmented levels of inflammatory cytokines have been reported in subjects with SO. These markers of inflammation produced by adipose tissue and inflammatory immune cells may accelerate the rate of muscle breakdown, reducing muscle strength and contributing to the development of sarcopenia and SO. Two hundred and sixteen obese elderly women were included in this cross-sectional study. They were submitted to analysis of body composition by DXA to define the presence of SO. The volunteers were divided into two groups: SO (n = 83, 66.7 ± 5.6 years) and non-SO (n = 133, 67.6 ± 4.9 years) for comparison of inflammatory cytokines. There were no statistically significant differences between the SO and non-SO groups in the blood concentrations of the inflammatory markers analyzed, e.g. interleukin-6 (0.82 ± 0.20 vs. 0.83 ± 0.19 pg/ml, p = 0.64), PCR (2.70 ± 1.55 versus 2.82 ± 1.66 p = 0.71), TNF- alpha (0.71 ± 0.08 vs. 0.70 ± 0.08 pg/ml, p = 0.42) and interferon-gamma (0.75 ± 0.14 vs. 0.74 ± 0.08 pg/ml, p = 0.47), respectively. In conclusion, the results of this study demonstrated that both groups presented a high inflammatory profile, demonstrating that obesity se may explain a greater probability of inflammation in elderly women without differences between groups.

Funded by Research Support Foundation of the Federal District, Foundation of Scientific and Technological Developments and the University of Brasilia.

Gender Differences in Non-Alcoholic Fatty Liver Disease Induced by Methionine/Choline Deficient Diet

Young-Suk Jung* and Sou Hyun Kim

College of Pharmacy, Pusan National University, South Korea

Abstract

Differential susceptibility to metabolic disease between the sexes exemplifies the importance of sexual dimorphism in pathogenesis. We hypothesized that the higher incidence of non-alcoholic fatty liver disease in males involves sex-specific metabolic interactions between liver and adipose tissue. In the present study, we used a methionine-choline deficient (MCD) diet-induced fatty liver mouse model to investigate sex differences in the metabolic response of the liver and adipose tissue. After 2 weeks on an MCD-diet, fatty liver was induced in a sex-specific manner, affecting male mice more severely than females. The MCD-diet increased lipolytic enzymes in the gonadal white adipose tissue (gWAT) of male mice, whereas it increased expression of uncoupling protein and other brown adipocyte markers in the gWAT of female mice. Moreover, gWAT from female mice demonstrated higher levels of oxygen consumption and mitochondrial content compared to gWAT from male mice. FGF21 expression was induced in liver tissue by the MCD diet, and the degree of upregulation was significantly higher in the livers of female mice. The endocrine effect of FGF21 was responsible, in part, for the sex-specific browning of gonadal white adipose tissue. Collectively, these data demonstrated that distinctively female-specific browning of white adipose tissue aids in protecting female mice against MCD diet-induced fatty liver disease.

Serum Apelin Levels in Mexican Obese Childhood Seems to be a Liver Function

Yunuen Quintero-Silva¹ and Rebeca Pacheco-López

Universidad Michoacana de San Nicolás de Hidalgo, Licenciatura en Nutrición, México

Abstract

Apelin is a bioactive peptide expressed in adipocytes of human, active forms of apelin are expressed in several tissues as adipose tissue, gastrointestinal tract, lung, kidney, liver, heart and brain regions. The metabolic effects of apelin are in both energy metabolism and insulin sensitivity. Studies in apelin serum levels are lacking in Mexican children population. The purpose of the present study was to evaluate the apelin serum levels in Mexican child and identify associations with obesity-related markers. In this study were enrolled 20 obese and 20 non-obese age and gender matched Mexican children, mean age was 6-10 years. Main outcome measures were BMI, lipids, glucose, insulin, bilirubin, creatinine, serum total protein, Gammaglutamyltransferase (GGT), globulin and serum apelin levels. Obesity was defined as a BMI at or above the 95th percentile for children of the same age and sex according to CDC. Obese subjects had significantly lower serum apelin levels as compared with lean ($p = 0.001$). Besides, apelin levels showed a positive correlation with HDL-*col*, bilirubin and a negative correlation with obesity, TAG and GGT. Apelin serum levels have an action in lipid metabolism and it seems to be a liver function marker.

E-Poster

The Assessment of Immunological Parameters in Children with Allergic Diseases and Obesity

Gervazieva VB, Mazurina SA, Konishcheva AU, Sveranovskaya VV and Lysogora VA

Mechnikov Research Institute for Vaccines and Sera, Moscow, Russia

Abstract

Allergic diseases become increasingly common all over the world and the prevalence of obesity recognized as greatest pandemy of the XXI century, especially threatening children population. Obesity considered as a chronic low-grade inflammation with adaptive and innate immunity involvement, whereas excess adipose tissue can act as potent source of pro-inflammatory cytokines. We aimed to evaluate the association of clinical and immunological parameters of obesity and allergic diseases in groups of children with different body mass index (BMI).

Materials and Methods: We conducted retrospective case-control study of 322 medical histories of children aged 12-17 years with allergic diseases, including 229 with atopic bronchial asthma (BA), 36 with allergic rhinitis (AR), 29 with atopic dermatitis (AD) and 28 children with both AR and AD, which were categorized in accordance with body mass index (BMI) into groups with normal weight, overweight and obesity. The reference group included 48 healthy children. Allergic history data and blood allergy tests (sIgE spectrum) have been accessed. In blood serum of 108 children we determined the levels of total IgE, CRP, IL-6, IL-8, TNF α and leptin, using commercial test systems of Vector-Best (Russia) and DBC Can-L-4620 (Canada). Parameters of innate immunity (phagocytosis and complement activity) and main lymphocyte populations were measured in blood samples from 214 children with allergic diseases (AR, AD, BA). We used the chi-square test to compare the characteristics of the participants and estimated odd ratios (ORs), 95% confidence intervals (CIs), and P for trend. «Statistica 7.0» software was used for statistical analysis. The study was approved by Ethic Committee at the Mechnikov Research Institute for Vaccines and Sera, Moscow.

Results: All the patients were divided into 3 groups based on the evaluation of BMI: 122 – normal weight (38%), 102 – overweight (31.6%) and 98 (30.4%) – obesity. Anthropometrical analysis of 322 medical histories revealed that in 62% (2/3 of cases) children aged 12–17 years with allergic diseases were overweight, including obesity that encompassed 50% of cases in total. The frequency of obesity was significantly elevated in 12-14 aged patients and tended to reduce as the age levels increased (OR-9.0; 95% CI: 1.56-51.86; $p = 0, 08$ and OR-0.27; 95% CI: 0.08-0.94; $p = 0.04$, respectively). We did not observe any associations between BMI and gender in all groups. The odds ratio for sIgE to pollen (grasses, weeds and trees), food and house dust mite allergens was increased in the obese children compared with the parameters in other groups. Within 229 patients with atopic asthma 84 (36.7%) were overweight, 82 (35.5%) were obese and 63 (27.5%) were normal weight. The value of BMI appeared to be directly associated with atopy and was influenced by the type of disease. Among 93 of non-asthmatic children with allergy 23 (24.7%) were overweight, 18 (19.3%) – were obese and 52 (56%) were with normal BMI. The frequency of obesity and overweight among children with bronchial asthma was 3 times higher, in association with high number of

comorbidities than in allergic non-asthmatic group. In all children with allergic diseases, as the value of body weight increased, the levels of total IgE, NK CD16 + cells, CRP and leptin in blood samples increased, while the activity of phagocytosis decreased. We revealed negative correlations between BMI and the complement levels ($r = -0.61$) as well as with T cell counts ($CD3 + r = -0.73$, $CD4 + r = -0.65$, $CD8 + r = -0.51$) and positive correlation with phagocytosis activity ($r = 0.58$) in patients with obese. The level of total IgE in children with asthma was higher than in groups with allergic rhinitis, and increased in accordance with the body weight ($p = 0.05$). The leptin content was enhanced in children with obesity in both groups BA and AR+AD, but in the cases with AR + AD its level was significantly higher ($p = 0.001$). The level of CRP was also increased in obese children, but the highest values we observed in children with asthma ($p = 0.04$). The concentration of pro-inflammatory cytokines revealed some differences. Thus, the level of IL-6 was increased in children with AR and normal body weight, IL-8 in children with enhanced body weight, and only TNF α was elevated in children with asthma in obesity ($p = 0.008$). Thus, our study could further confirm the impact of obesity into the pathogenesis of allergic diseases. The overweight and obesity in children with allergic diseases showed association with atopic BA and might be considered as the factors of its unfavorable clinical course, associated with higher comorbidity.

The Relationship Between Diet and Other Elements of Lifestyle and the Health Status of Adult High School Students

Katarzyna Wiśniewska¹ and Małgorzata Koziarska-Rościszewska²

¹Students' Scientific Association of Family Medicine, Medical University of Lodz, Poland

²Department of Nephrology, Hypertension and Family Medicine, Medical University of Lodz, Poland

Abstract

Background: Diet and lifestyle have a huge impact on human health. Consuming too much calories (in relation to the needs) or limiting physical activity can result in overweight or obesity even at an early age.

Objectives: The aims of the study were assessment of the lifestyle of high schools students in Łódź (Poland) and analysis of relationship between lifestyle and health of students.

Material and Methods: A group of 106 high school students in Lodz (76 women - 72% and 30 men - 28%) were enrolled. A questionnaire concerning lifestyle and selected diseases was completed. Anthropometric measures and physical examination were made. BMI and WHR were calculated. In addition, in 35 volunteers out of the respondents, blood tests (lipids, glycemia) were done.

Results: In 18% of the students BMI was ≥ 25 kg/m². Abnormal waist circumference was observed in 8%. Elevated systolic and/or diastolic blood pressure were found in 4%. Elevated total cholesterol in 4%, hyperglycemia in 0.9%. PE classes attended 69% of the respondents; 59% of the participants were physically active in their leisure-time.

Conclusions: In the examined group of adult high school students cardiovascular risk factors (excessive body weight, dyslipidemia, and hypertension) were observed. Improper dietary habits affect the health status in teenagers. Physical activity of the examined youth seems satisfactory. Most of the high school students participate in physical training at school and actively spend a leisure-time. Preventive methods in the youth should include proper diet and the promotion of active lifestyle.

References

1. Must A, Spadano J, Coakley EH, Field AE, Colditz G, et al. 1999. The disease burden associated with overweight and obesity. *JAMA* 282(16): 1523-1529. <https://doi.org/10.1001/jama.282.16.1523>
2. Pi-Sunyer FX. 2002. The obesity epidemic: pathophysiology and consequences of obesity. *Obes Res* 10(Suppl 2): 97S-104S.
3. WHO. 2018. Obesity and overweight.
4. International Diabetes Federation. 2006. The IDF consensus worldwide definition of the metabolic syndrome.

Citation: Proceedings of the 3rd International Conference on Obesity and Chronic Diseases (ICOCD-2018). *J Obes Chronic Dis* 2(Suppl 1): S1-S45.

Copyright: This is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC-BY) (<http://creativecommons.org/licenses/by/4.0/>) which permits commercial use, including reproduction, adaptation, and distribution of the article provided the original author and source are credited. Published by United Scientific Group.

Received: August 17, 2018 Accepted: September 03, 2018 Published: September 06, 2018